

BALANCING ACT:
SYNERGY OF COMBAT AIRPOWER FUNCTIONS

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The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.



ABOUT THE AUTHOR

Major Chris Wachter graduated from the United States Air Force Academy in 1997. He completed Joint Undergraduate Pilot Training, at Whiting Field NAS, Florida, and Vance AFB, Oklahoma. As an instructor pilot, Major Wachter deployed twice in support of Operations Enduring Freedom and Iraqi Freedom, where he flew over 30 combat missions and was awarded the Distinguished Flying Cross. After graduating from the USAF Weapons School in 2004, he served as the wing weapons officer, assistant operations officer, and instructor at the USAF Weapons School. Before attending the School of Advanced Air and Space Studies, he graduated from Army Command and General Staff College, Fort Leavenworth, Kansas. Major Wachter is a senior pilot with over 1500 hours, 325 combat hours, flying a balanced, flexible combat aircraft. Upon graduation, he will be assigned to the Pentagon.



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First and foremost, the credit for this thesis comes from the lessons I learned as a student, then instructor, at the United States Air Force Weapons School. The school is unmatched in its ability to integrate and flexibly employ every platform the USAF possesses across a very wide spectrum of possible challenges airpower might face. If ever one wanted understand how to interdependently employ all functions of airpower, they should observe the USAF Weapons School's capstone exercise, Mission Employment (ME). My personal wartime experiences, from night one of Major Combat Operations in Iraq, to performing armed reconnaissance in Afghanistan on days 1000+, further convinced me of the necessity of balanced, flexible airpower responsive to all levels of war. However, it also highlighted to me that the USAF procurement process is often out of sync, as it continues to seek expensive single-mission aircraft. My interactions with the great men and women of the United States Army, at Command and General Staff College, reminded me that airpower will never be at its finest unless it is employed in concert with our sister services. The School of Advanced Air and Space Studies revealed to me that my thoughts on balanced airpower were not new; there had been similar views even before World War Two.

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ABSTRACT

This study analyzes the role of combat airpower functions in war. The author first examines the how functions of force are traditionally balanced to achieve maximum effects on the battlefield through an examination of Carl von Clausewitz and J.F.C. Fuller. He then compares and contrasts traditional military theory with initial airpower theories, concluding that the domain of air is not so unique as to change the nature of war. The study examines how the 'Prophets of Air Power' – Giulio Douhet, Billy Mitchell, and Hugh Trenchard- pushed newly developing air forces toward imbalanced force structures. The author examines the works of other airpower theorists of the interwar period, such as Claire Chennault and John Slessor, to determine if there were more balanced approaches to airpower that would still be relevant today. He examines the effective air campaigns of two World War Two Airmen, Major General Pete Quesada and General George Kenney, revealing how their balanced approaches to combat airpower were key to their successes. With an understanding of traditional military vs. airpower theory, and examples of successful air campaigns, the author uses a three-sided model to reframe the functions of combat airpower. Within this framework, he demonstrates how elements can and must be balanced to meet any and all possible demands placed upon combat airpower in future conflicts.

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CONTENTS

Chapter	Page
DISCLAIMER.....	ii
ABOUT THE AUTHOR	iii
ACKNOWLEDGMENTS	iv
ABSTRACT	v
INTRODUCTION	1
1 BALANCE OF FORCE	18
2 THE PROPHETS	32
3 THE OUTLIERS	42
4 THE OPERATORS.....	54
5 REFRAMING COMBAT AIRPOWER.....	69
CONCLUSION	87
BIBLIOGRAPHY.....	98

INTRODUCTION

Air power started out as a theory, an explanation of how to avoid repeating the nightmare of World War I. It turned into a mission when the clouds of World War II gathered and the theory was converted into the reality of air power. It became a vision for an independent institution even as the mission was undertaken. And, it became a strategy for coping with the stalemate of the Cold War.

Carl H. Builder

Any Air Force which does not keep its doctrines ahead of its equipment, and its visions far into the future, can only delude the nation into a false sense of security.

General Hap Arnold

The Contentious History of Airpower

Airpower has been a subject of intense debate from its very inception. The airplane and its military uses have evolved as theorists sought to define, understand, and apply strategic concepts within the domain of air. Theorists, leaders, and politicians have zealously argued over what aircraft could, should, and would do in the battlespace for multifaceted reasons. Politicians have often seen airpower as a means to avoid the large-scale attrition and stagnation of land battles. Some theorists such as Douhet, Mitchell, and Trenchard have seen airpower as a means to obviate traditional military strategy and strike directly at the heart of the enemy. Others, such as Slessor, Chennault, Quesada, and Kenney, felt airpower was an interoperable means (albeit a powerful one) to shape the battlefield in conjunction with traditional ground or sea schemes of maneuver to achieve the ends of national strategy. Politicians and military leaders alike have used airpower as a way to

engage in combat when the use of ground forces is politically, economically, or operationally infeasible. There were visionaries, who thought beyond traditional air-to-air and air-to-ground combat, expanding airpower's advantages and impact, while others still sought to increase airpower's traditional capabilities through advancements in performance, payload, and lethality. World War II put virtually every possible mission an aircraft could perform through the trial of combat.

Although airpower delivered the ultimate blows of the war through atomic weapons delivery, after WWII theorists and leaders still disagreed on what was the 'best' use of airpower. Whether or not airpower is decisive, the best use of national treasure and how it is best applied to meet each nation's military purposes is still a subject of fierce debate today. However, World War II established key precedents and dividing lines on the application of military power in future conflicts, and in doing so gained a fervent following of articulate advocates. The United States Army Air Forces (USAAF) held the spotlight, and purposefully strove toward service independence and equality, which finally came in 1947. In the period of post-war retrenchment, airpower was expected to make good on the promises of its advocates that it could achieve over-arching dominance and decisiveness in warfare.

This implied promise downplayed the crucial role of forces employed in other realms of the battlespace. Coupling weapons of previously unimagined destructive capability with a changed political worldview, USAF airpower was dominated by the "insularity and narrow doctrinal focus of SAC" that found its traditional roles ill-suited to the demands of the conflicts in Korea and Vietnam.¹ As a result, the pendulum swung drastically from Strategic Air Command (SAC) to Tactical Air Command (TAC) as the focus of the USAF's leadership, doctrine and budgetary priorities. With successes in Desert Storm and

¹ R. Michael Worden, *Rise of the Fighter Generals : The Problem of Air Force Leadership, 1945-1982* (Maxwell AFB, Ala.: Air University Press, 1998), 236.

Operation Allied Force, the fighter community-led Air Force demonstrated how to quickly dismantle an adversary's air defenses, and achieve limited ends in small conflicts. The initial air campaigns of Operations Enduring Freedom and Iraqi Freedom demonstrated airpower's potential when properly balanced between strategic and tactical forces, integrated into the joint campaign.

However, there has been little consideration on how to optimize the strategic and tactical portions of airpower in long-term counterinsurgencies or other low intensity conflicts. The current in-demand aspects of airpower focus on providing services to the ground commander through Intelligence, Surveillance, and Reconnaissance (ISR), Special Forces (SOF), timely Counterland effects, and persistent Command, Control, and Communications (C3). This has again created the potential for an imbalance in the USAF; one that could unnecessarily resurrect the institutional independence argument, and cause nearly every budgetary decision the Air Force makes not directly aiding the war in Afghanistan to come into question.² The current conflict, and the threat of imbalance of forces therein, coupled with a misunderstanding of airpower's limits and an overstatement of its capability, could force a retrenchment of airpower theory along strategic and tactical lines. Even worse, the pendulum may swing to a third imbalance of mission, money, and manpower toward an air service used only to support the ground domain. The best course of action for the USAF is to strike a balance amongst all of its combat capable forces to ensure the service is powerful, flexible, and responsive to reasonably match the requirements of future war, along the entire spectrum of conflict. To understand how

² In recent years, due to the nature of current conflicts, some have called for the Air Force to be subsumed back under the Army. This has created polarized responses to the issue. See Robert Farley, "Abolish the Air Force," *The American Prospect*, http://prospect.org/cs/articles?article=abolish_the_air_force. and Charles J. Dunlap, Major General, "America's Asymmetric Advantage," *Armed Force Journal*, <http://www.armedforcesjournal.com/2006/09/2009013>.

best to balance our combat airpower forces, we should strive to understand why prior imbalances occurred.

What is the Best Balance of Air Forces?

The idea of balance of forces is neither new nor innovative, but it is often very difficult to achieve, and determining what the appropriate levels should be is certainly a subject of on-going debate. What then, of the USAF and its combat elements? This thesis attempts to answer the question: How do we best balance our combat air forces at the strategic level, in order to meet national strategic requirements along the spectrum of conflict? The dichotomy, which split airpower into unbalanced “strategic” and “tactical” components, in the 50 years after World War Two ended up costing the USAF much in manpower, machines, and credibility. The USAF may continue along its present course of attempting to reconcile the dilemma of providing "strategic" long-range air power, "tactical" air power, and airpower directly in support of ground forces, as long as these are seen as conflicting, competing, or contradictory in their purpose. I propose that with proper understanding of the relative terms, desired effects, limitations, and capabilities, the perceived paradoxical nature of airpower instead can instead be seen as synergistic and adaptive across the entire spectrum of conflict.

Is Airpower Strategy Revolutionary?

It is not difficult to make a convincing argument about the uniqueness of the air domain. There is no other domain in which man can persistently operate and project power that covers the whole of the earth. Is the air domain so different that it requires revolutionary strategy when considering warfare between men who are forced to live within the confines of the domain of land? Alternatively, are the strategic and tactical concepts of the classical military theorists still relevant when applied to the air domain? Has the issue of balance been a contentious part of military strategy in the past?

In chapter one of this thesis, I will examine traditional military theory and the issue of balance in order to show how interpretations and misinterpretations may have shaped airpower strategy for the past century. Focusing on the three-sided analyses of Carl von Clausewitz and J.F.C. Fuller, I will stress the importance in crafting properly balanced forces to meet strategic goals. In chapter two, I will then compare these concepts to those of early airpower advocates Douhet, Trenchard, and Mitchell, in order to show how their focus on one aspect of airpower led to the predominant airpower strategy for World War Two. In chapter three, I will highlight the works of some of the outliers on airpower theory, Chennault and Slessor, who saw the potential capabilities of airpower through the combination of multiple combat roles. In order to fully understand how to seize upon this potential for maximum capability, a better understanding of the terms and definitions regarding airpower must first be established.

Before any person can rightly assert what airpower can or cannot do, or how to properly balance “strategic” or “tactical” airpower, there must be a common understanding of the term airpower. In 1925, Billy Mitchell gave us possibly the simplest, yet most accurate definition of airpower while it was in its embryonic stage: “Airpower is the ability to do something in or through the air.”³ A similarly worded, modern day definition might be: Airpower is the ability to affect something in or from the air. Whether it is doing or affecting, the utilization of airpower against something is central to this definition. The definition does not say airpower must do anything, everything, or whatever seems to fit at the moment. This ‘thing’ that airpower will affect must also be fully identified and understood. While this may seem simplistic, the failure to identify the aim of airpower, and its desired effect, is often the root cause of its misapplication. What Clausewitz writes on the initial action that

³ William Mitchell, *Winged Defense : The Development and Possibilities of Modern Air Power--Economic and Military* (Tuscaloosa, AL: University of Alabama Press, 2009), 4.

political and military leaders should take is especially relevant when discussing the application of airpower. He states: "The first, the supreme, the most far-reaching act of judgment that the statesman and commander have to make is to establish by that test the kind of war on which they are embarking; neither mistaking it for, nor trying to turn it into, something that is alien to its nature."⁴ For proper employment of airpower, the desired effect and intended recipient must be clearly identified to best achieve the intent of the statesman and commander. The disconnect between "strategic" and "tactical" airpower appeared early in aviation's history when the first advocates of airpower promised that airpower could do more than just something, from the air, on the battlefield. They promised it could do *everything of consequence on the battlefield*.

Applications of Airpower Strategy

Strategists have viewed airpower as a means to strike the heart of an enemy by reaching beyond or simply bypassing traditional defenses, strategists have pitched airpower as being able to strike right at the heart of the enemy. The traditional definition of strategic airpower suggests that airpower can have strategic effects through three means: a) breaking the will of the people by attacking them directly, b) denying a state the ability to fight by inflicting a form of paralysis on its political-industrial complex, c) attacking senior leadership or government directly. This core concept of strategic airpower derives from a unique interpretation of Clausewitz's concept of warfare. He asserted that in order to defeat an enemy, his army must be defeated, his capital and/or country occupied, and the will of his people to fight broken. Through airpower, the first two could be avoided as it effects when straight to the will that empowers a state.

The Birth of Strategic Air Power

⁴ Carl von Clausewitz et al., *On War*, Oxford World's Classics (New York: Oxford University Press, 2006), 88.

Early airpower advocates seized upon the opportunity to directly target will and industry. This interpretation failed to account for the possibility that, even after extensive bombing, the will of the people might remain strong if their army was still in the field and their government was still exercising control. The 'strategic' bombing campaigns of WWII arguably proved this point true, as their extensive and exhaustive nature failed to be decisive until ground forces could actually ensure final defeat of the fielded army and occupation of the enemy's homeland.

When extremely high expenditures of men and equipment failed to create a collapse of will or industrial paralysis, ground invasion of both the Japanese-occupied islands and the Axis-occupied European continent appeared to be compulsory, in order to set the conditions for the unconditional surrender terms the politicians demanded. Here airpower would have to play a subordinate role, achieving effects through supporting the ground and sea schemes of maneuver. Since the use of airpower in this way was not seen to be independently achieving the nation's goals, it was labeled 'tactical' airpower. Near the end of WWII, timely use of tactical airpower positively shaped the battlefield and greatly enhanced the speed and lethality of the ground and sea forces, despite the fact that many USAAF leaders regarded such employment as a waste of assets.

With the advent of the nuclear weapon, airpower advocates again thrust to the forefront their contention that strategic airpower 'could do it all'. With nuclear weapons, airpower could simultaneously destroy an army, a capital, and a population. It proved that total war was indeed possible, and a country could win this type of war if it chose to fight it. However, there was a lack of comprehension of the full implications of this strategy, even as it became the primary means of applying USAF airpower in the post-WWII period. At the end of WWII, the U.S. had narrow definitions of tactical and strategic airpower, and an incorrect (or at least incomplete) perception of how to use airpower to win future wars.

The Imbalance of Strategic and Tactical Air Power

The idea that airpower could singlehandedly win a nation's wars was the central concept behind the doctrine of strategic airpower after WWII. This appeared to be a perfect meld of politics, industry, technology, and military capability, as the U.S. and others drew down after the war. If there was going to be another war, the U.S. could decisively use its ultimate weapons for swift resolution. There was no need for a large ground army, fleet, or, for that matter, a tactical air force. There was, however, a strong desire by U.S. Army Air Corps officers for an independent air force, coupled with the corresponding belief that strategic airpower be the decisive element in war from this time forward.

In its quest for institutional independence, the USAF envisioned a single functional command focused on strategic airpower and a large fleet of bombers that could strike decisively. Air Force leaders perceived tactical airpower not just as unnecessary, but as a threat to this independence. Carl Builder explains this concept in *The Icarus Syndrome*: "The post-WWII rationale for an independent air force rested largely on two claims--one intellectual, the other bureaucratic. The intellectual claim was the proposition that air power, specifically strategic bombardment, afforded a quick and relatively cheap means of winning war autonomously, i.e., independently of the actions of surface forces... By deliberate omission, the theory more or less ignored the role and value of tactical air power, which, because it was tied to combined operations involving surface forces, provided no firm foundation for independence."⁵

Hence, tactical airpower was neither wanted nor integrated into the future of the new USAF. The concept of solely strategic airpower may

⁵ Carl H. Builder, *The Icarus Syndrome : The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (New Brunswick, N.J., U.S.A.: Transaction Publishers, 1994), 141.

have allowed the USAF to garner its independence, and it may have assured it priority of budgeting in the post World War II period, but the new service had made no consideration for how strategic airpower would be applied once an adversary achieved nuclear parity. The real irony lay in the fact that strategic airpower based on nuclear weapons would not be used because the level of mutual destruction it represented was too great for either superpower to risk. Whether this is viewed as a success or a failure of strategic airpower is certainly debatable, yet the fallout from this imbalance of strategic and tactical airpower is not. The USAF was ill equipped to fight its nation's wars in Korea and Vietnam, where limited war was the only option under the shadow of nuclear escalation. Had the Air Force followed through on its promise to maintain a balance through inclusion of tactical air forces, and had they acknowledged the limits of airpower (and of military power writ large), they may have better served their institution in these conflicts.⁶

The Traditional Definitions Crack

Colin Gray has asserted, "many theorists of air power have imposed unreasonable and unnecessary standards for judging the success of airpower in war."⁷ Gray's statement challenges those who claim unreasonably that airpower is able to do everything of consequence on the battlefield. In the drive to establish institutional independence, USAF leaders sold strategic airpower to the American public and politicians as a panacea, often to the detriment of tactical airpower. Many in government were willing to accept this solution, in lieu of having to maintain larger conventional forces. With the concept of the airpower cure-all in place, strategic airpower became a primary means of influencing the enemy's center of gravity, even when it was ill suited to the task at hand.

⁶ Ibid., 141.

⁷ Colin S. Gray, *Explorations in Strategy*, Contributions in Military Studies, (Westport, Conn.: Greenwood Press, 1996), 57.

Many have argued that both the efforts in Korea and Vietnam, at certain phases, represented a failure of airpower to make good on its promises. However, this failure is not necessarily an isolated function of bad strategy, aviation, or policy, but a combination of all three. Clausewitz cautioned military strategists when planning for an operation: “one must keep the dominant characteristics of both belligerents in mind. Out of these characteristics a certain center of gravity develops, the hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed.”⁸ When the USAF expended energies against the enemy’s center of gravity (COG), they were successful, even when engaged in conventional combat. Against the North Koreans, “American airpower helped carry MacArthur to the Yalu,”⁹ but was ineffective once Chinese forces became involved and their centers of gravity (factories, runways, and supply lines within China) were off-limits to strategic airpower due to political restrictions.

In Vietnam, the series of events were reversed. Rolling Thunder’s graduated buildup of airpower did not focus on affecting the COG for the North Vietnamese. Instead, it attempted to coerce the North Vietnamese to come to the negotiating table, and stop the flow of supplies into South Vietnam without going directly after its sources. The politicians of the Johnson era wrongly believed that a graduated scale of strategic airpower could drive political change, even while targeting ‘things’ that did not empower their adversary. It was only with the ‘unleashing’ of airpower in the Linebacker operations that the traditional strategic air forces were able to produce effects against the COGs and change the North Vietnamese politicians’ mindset.

Mark Clodfelter has discussed the application of airpower and the one true criterion for evaluating its success. “That criterion is the

⁸ Clausewitz et al., *On War*, 596-7.

⁹ Conrad C. Crane, *American Airpower Strategy in Korea, 1950-1953*, Modern War Studies (Lawrence, KS: University Press of Kansas, 2000).

ultimate bottom line: how well did the application contribute to achieving the desired political objective? Did it, in fact, help to win the war? Answering that question first requires a determination of what is meant by winning. The war aims must be defined, and the application of air power must be linked to accomplishing those objectives.”¹⁰ The use of airpower in Korea and Vietnam highlighted multiple issues with the traditional definitions and implementation. This can be summed up with the simple statement: “Strategic” air forces, when applied incorrectly against “things” that are not the source of power, will not have the desired effect, and are, therefore, not strategic. Long-range airpower can only be strategic in its consequences if it is unleashed against the source of power requiring influence. However, in the past, clever adversaries often turned strategic airpower’s apparent strength into a weakness using a variety of methods. Opponents took advantage of mobility, dispersal of industry, and forging alliances with countries outside the politically-limited reach of traditional airpower to minimize the strategic impact of traditional airpower. The question became: how could an air force achieve strategic effects under these conditions?

The perceived answer was an emphasis on tactical airpower, closely integrated with the ground scheme of maneuver, which was another large pendulum swing toward a different function of airpower. For too long, the USAF had tied itself to independence at all costs, instead of understanding the need for interdependence once the enemy renders his centers of gravity unreachable. If politically restrained, airpower would never be able to achieve the political objectives, or win, by itself. This was and still is a hard lesson for American military (and not simply airpower) professionals to accept. However, many American airmen in the post-Vietnam era realized that if there were limits to what traditional strategic airpower could do, there were ways in which

¹⁰ Mark Clodfelter, *The Limits of Air Power : The American Bombing of North Vietnam* (Lincoln: University of Nebraska Press, 2006), 215.

airpower could become more relevant to the general scheme of maneuver in limited war.

When airpower is politically limited, the war effort tends to take a longer time, during which both air and ground forces are subject to attrition. Tactical aviation can mitigate this phenomenon, by successfully establishing air superiority and being responsive to ground support requests. While not promising an immediate knockout blow, tactical air forces, viewed holistically, can have a strategic effect themselves. Solely through the savvy use of tactical airpower, aviators are able to provide a new type of decisiveness, setting the conditions for victory to be achieved by other services.

The realization of this concept drove Air Force leadership to generalize that the future of airpower should be based on tactical aviation. Instead, Air Force leaders should have realized that the traditional definitions of strategic and tactical airpower create unnecessary confusion within the institution, and this confusion is directly related to the limited-scope, stove-piped application of certain airframes for certain levels of conflict.

A Relook at Traditional Definitions

If traditional strategic airpower will fail to achieve strategic effects when misapplied, and properly integrated tactical airpower can have strategic effects, then the traditional dichotomy of airpower is a paradox. I believe this dichotomy is wholly unnecessary, but resolving it requires a redefinition of terms. Colin Gray concurs with this concept, expressing, “There is no such beast as ‘strategic’ air power and there are no such things as ‘strategic’ targets.”¹¹ He further asserts that airpower theory is, and has often been, confused by the inference that strategic airpower is tied to long range, off-battlefield, nuclear, or otherwise commanded by a

¹¹ Gray, *Explorations in Strategy*, 61.

‘strategic’ named organization, such as Strategic Air Command (or Strategic Rocket Forces, for that matter).

If instead, one looks at the basic definitions of airpower– what it is that airpower does or what it can affect – one can resolve the dilemma between strategic and tactical airpower. Air power does not have to be strategic at all times nor does it have to do everything of consequence to justify its value or existence. Additionally, in any situation short of a commitment to total war, conventional or nuclear, airpower cannot be the sole arbiter of national strategic power. It may set the stage, cause the preponderance of physical destruction, and, in many cases, be the decisive element, but only when properly coordinated with other branches of service and instruments of national power. Gray’s sentiments on this follow a similar vein: “Except for those cases of conflict wherein air power can deliver victory by independent action, the strategic value of an air force must be metered by the prowess of other military arms. The significance of air power as the key to victory has to be influenced greatly, even controlled, by the ability of ground and naval forces to proceed through the door that the air power key has opened.”¹² The proper application of airpower requires an understanding of when it should be independent or auxiliary and how to balance each.¹³ Chapter four of this thesis will give examples of two World War II Airmen who were able to balance their forces in order to best apply airpower across the spectrum of conflict.

Despite these two success stories, in most cases achieving balance to reconcile the paradox has appeared to be much easier said than done. Yet, with advances in technology, and the transition of the world from bipolar stability to the uncertainty of American hegemony, the USAF was able to capitalize on this concept and prosecute two successful air campaigns in Iraq. RAND analyst Ben Lambeth attributes much of this

¹² Ibid., 131.

¹³ Clodfelter, *The Limits of Air Power : The American Bombing of North Vietnam*, 213.

transformation of American airpower as the result of increased training, technical competence, intelligence, and command and control.¹⁴ These aspects are very important and demonstrated the USAF's willingness to resolve the dilemma. However, the key enabler to this was a fundamental change in ethos for the Air Force. Just as the USAF was able to achieve balance between its forces to successfully transform airpower into a flexible, responsive, scalable agent for achieving a desired end-state, the forms of combat it faced would change once again with the transition to fighting long term irregular war in the 21st century.

As the USAF began to step away from its overarching push for independence through total strategic airpower, it was able to consider how airpower might fit into the grand strategy of a conflict from a much broader perspective. Airpower advocates better aligned airpower strategy with the guidance given by Clausewitz: determine the type of war, match military objectives to political intent, and seek out the dominant characteristic airpower can rightly affect. Understanding that airpower simply means doing something from the air or affecting something from the air should be the first step in continuing to broaden the aperture on the capabilities of airpower. Airmen must also understand that airpower is not a means unto itself. It cannot, nor should it strive to, do everything. Airpower can be the sole force in a limited engagement, provided there are limited ends, and Airman and decision maker alike understands these limitations. On the difference between tactical and strategic airpower, Gray explains, "Whereas tactics is the realm of the actual employment of armed forces, strategy refers to the intended or real consequences of the use of forces for the course and outcome of war. It follows that all weapons are tactical in their immediate effect, and all weapons are strategic in the consequences of their actions."¹⁵ Airpower

¹⁴ Benjamin S. Lambeth, *The Transformation of American Air Power*, Cornell Studies in Security Affairs (Ithaca, N.Y.: Cornell University Press, 2000).

¹⁵ Gray, *Explorations in Strategy*, 61.

is at its best when properly balanced between long-term consequence strikes (the old strategic), and short term effects that enable/empower future action (the old tactical). The USAF must not only be able to strike a balance, it must be able to flexibly change its weight of effort to match changing threats across a spectrum of conflict.

A New Combat Airpower Paradigm

Chapter five will reframe airpower into terms more congruent with the balanced approach. It will also focus on the challenges and limitations to the ability to balance airpower in the future. One potential challenge for the future is to determine how to apply the lessons learned from this resolved paradox in non-traditional, guerilla conflict. Again, a focus on the Clausewitzian dominant characteristics is key to understanding how best to apply airpower. The USAF must be flexible enough to provide airpower through non-traditional means, in order to aid sister services and non-DoD agencies to shape their fights against irregular adversaries. At the same time, it must also maintain its capabilities for long-range independent strike if required, and ensure it can maintain freedom of action within the air domain.

As budget limitations continue to constrain the number of systems the Department of Defense can support, civilian and military leaders alike will always see airpower as a quick and easy way to achieve ends with minimal risk or investment. The resulting force structure may not be responsive to meeting the requirements for airpower across the spectrum of conflict. The USAF must also be wary of adversaries challenging our hegemony in the air. To prevent this, and ensure that airpower capabilities are maximized across the spectrum of conflict, the traditional definitions of function and application must be updated as well. I propose a balanced theoretical model of combat airpower to meet our nation's interests.

In essence, combat airpower must consist of three key combat functions, which I have termed Air Offensive, Air Support, and Air

Service. Air Offensive is the combat function that must be able to proactively affect an adversary from the air domain to advance toward the desired end-state. Airpower must also possess Air Support forces that will ensure freedom of maneuver across the air domain to enable the full capabilities of Air Offensive. Finally when required, combat airpower must be able to subordinate itself to the scheme of maneuver in other domains through Air Service. All three of these functions must be kept in balance to match the full spectrum of future conflict.

Advocating solely for an independent decisive force or solely for a subsumed support force represents a misunderstanding of the tactical effects and strategic consequences. The purpose of this thesis is to illustrate how a concept of balance is not new or revolutionary, and how strategists and operators must overcome traditional mindsets to utilize a balance of the elements of USAF combat power across a wide spectrum of possible conflicts, to best provide airpower.

Conclusion

We must understand that the functions of combat airpower are not just interoperable, or interdependent, but are synergistic and multiplicative, if viewed in terms of balance. The U.S. Army does not fight solely with Armor, or Infantry, or Artillery. The U.S. Navy does not fight solely with Carrier Strike Groups, or Submarines, or its Special Forces. Yet, throughout its history the USAF has tried to force most of its power and budget into one function, be it strategic bombers in the post World War II era, or tactical fighters in the past twenty years, or possibly Irregular Warfare (IW) aircraft in the present and future. The Air Force must go beyond just realizing the imbalances it creates; it must understand that there is not one perfect ratio or apportionment that will meet the needs for all future conflicts. The balance of air forces required to achieve desired end-states for nuclear war, conventional total war, conventional limited war, irregular war, and operations other than war will vary greatly.

The fact remains that one aspect of an air force, by itself, will not win a war. The United States does not have the national capital to equip itself to achieve perfection in all aspects of airpower for all possible conflicts. However, current and future combat platforms should be able to achieve success and make (cost) beneficial contributions in multiple combat functions, depending on the desired end-state and scheme of maneuver. The USAF must be able to meet the demanding and possibly expansive requirements of an ongoing conflict, while still being balanced for future potentialities of a different 'type' of war.

The concept of 'this war-itis' is as detrimental as 'next war-itis.' Placing a predominance of reliance on any one function of combat power as a form of national strategy would be an error. The domain of air is no longer so unique that it requires zealous and selfish proprietary application. The capabilities of forces in the air domain should flavor our military theory and strategy, not dominate them as the sole ingredient. Airpower is no longer so innovative that it requires significant deviation from traditional military theory, as the nature of war has not been changed by airpower, but has absorbed and integrated its capabilities. So too, should the function of air forces be balanced to meet our nation's future challenges.

Chapter 1

Balance of Force:

Traditional Military Theory

A satisfactory theory of war [is] one that will be of real service and never conflicts with reality. It only needs intelligent treatment to make it conform to action, and to end the absurd difference between theory and practice that unreasonable theories have so often evoked.

Clausewitz

What we want to know is the truth about the past, and then how we can apply this truth to the conditions which surround us and which will probably exist during the next war.

J.F.C. Fuller

The New Domain of the Air

With one hundred years' experience operating in the air under our belts, it is hard to accurately appreciate the sense of awe and potential the domain of air represented to the founders of airpower theory. The uniqueness of the domain was such that one's wildest imagination could take flight and vast untapped potential existed for those who could operate in the air. The whole world became available for viewing, travel, and exploitation, but did the ability to operate in the domain of air fundamentally change the nature of war?

Surely, mastery of the domain of air created opportunities to accomplish tasks in new and innovative ways, and many of the early airpower theorists and advocates sought to show the overwhelming potential that manned flight represented. General Billy Mitchell, oft regarded as the 'father' of the American airpower, believed that with the advent of flight, the world had transitioned to the aeronautical era in

which “the destinies of all people will be controlled through the air.”¹ To be sure, the diverse uses of aviation created drastic changes on a wide variety of tasks, but did it create opportunities for new and unthought-of tasks?

There were many who thought the greatest potential changes aviation might bring about were in the realm of war. Giulio Douhet averred that airpower brought the potential of war to all places and *persons* on the planet, and that, “all the influences which have conditioned and characterized warfare from the beginning are powerless to affect aerial action.”² The promise of speed and lethality from an unstoppable means of delivery captivated many military thinkers during aviation’s early years, but there were greater numbers of obdurate Army and Navy leaders who saw little if any strategic value in independent airpower. This, in turn, only forced the initial supporters of airpower to press their case further, and overstate its application. Using Clausewitz’s holy trinity, some declared that airpower could independently strike at the will of the people to win a war, eliminating the need to destroy fielded forces or occupy territory.

This concept raises three key questions I seek to answer in the first three chapters. 1.) How does traditional military theory account for overwhelming strength in one domain or function?³ 2.) Is air power so different than power in other domains that the accepted military theory can be obviated by such an ‘overhead flank’? 3.) Were there any outliers advocating a more balanced approach to airpower employment? It is my assertion that the advent of airpower, while representing tremendous potential for power projection on the battlefield, did not fundamentally

¹ Mitchell, *Winged Defense : The Development and Possibilities of Modern Air Power--Economic and Military*, 3.

² Giulio Douhet et al., *The Command of the Air*, Fire Ant Books (Tuscaloosa, AL: University of Alabama Press, 1998), 9.

³ For the purpose of this thesis, the term domain refers to specific operating environments; Ground, Sea, Air, Space, Cyber

change the nature of warfare. As Colin Gray puts it, “Airpower transformed the grammar of strategy and war, but it has not transformed those activities in significant ways... strategy remains unchanged in its purpose and function, no matter how many layers of new kinds of military capabilities are added to its grammatical repertoire.”⁴ For conscious or sub-conscious reasons, the contrary claim that air warfare was unique was part of a concerted effort to secure service independence for those operating in the air domain. Service independence for a given domain was and is not a new idea; yet the overstatement of airpower used to establish this new service is no longer required. With over sixty years of independence, a proper re-evaluation of the fundamentals of what airpower can and cannot do, and acknowledgement of those who saw the potential for balance early on, is required.

The Inescapable Trinity

In order to best explain why airpower does not fundamentally change the nature of war, and how a balance must be struck in fighting forces, we need look no further than the work of Carl von Clausewitz. In his unmatched work, *On War*, he established the fundamental structure of war, its nature, and its relationship to mankind, their governments, and their military. For the purposes of this thesis, the Clausewitz model will be used as the ‘most correct’ interpretation of military strategy prior to the introduction of the aircraft.

Clausewitz believed that “war [was] nothing but a duel on a larger scale... thus an act of force to compel one’s enemy to do our will.”⁵ Force was the means and will the object in war. However, Clausewitz also explained that war in itself was not an isolated act, and had two key considerations. First, was the statement that “In war the result is never final.”⁶ The second, better-known statement was that “war is not merely

⁴Colin S. Gray, *Modern Strategy* (New York: Oxford University Press, 1999), 242.

⁵ Clausewitz et al., *On War*, 75.

⁶ Ibid., 80.

an act of policy but a true political instrument, a continuation of political intercourse, carried on with other means.”⁷ This second statement directly builds off of the first, a fact that is often missed. War is an iterative form of political discourse, where there is no actual ending point, but a constant contest between the total means of force by one side and the strength of will on the other, and vice versa. Since war is an act of policy, the ways and means in which a war is fought should be directly aligned with what policy wants to achieve. Furthermore, Clausewitz proffers, “war should never be thought of as something autonomous but always as an instrument of policy.”⁸

This means that even with the most advanced, destructive, or capable military force, fighting a kind of war that doesn’t directly seek to achieve the desired political ends will not be successful. Determining what kind of war you are about to fight is the most important task according to Clausewitz: “The first, the supreme, the most far-reaching act of judgment that the statesman and commander have to make is to establish by that test the kind of war on which they are embarking; neither mistaking it for, nor trying to turn it into something that is alien to its nature.”⁹ As Clausewitz creates his layers for what war truly is, he introduces yet another important task for the military theorist, understanding the nature of war. It is in explaining his vision of the nature of war that Clausewitz gives us his trinitarian analysis, and tacitly outlines the need for balance.

“As a total phenomenon its dominant tendencies always make war a paradoxical trinity— composed of primordial violence, hatred, and enmity, which are to be regarded as a blind natural force; of the play of chance and probability within which the creative spirit is free to roam; and of its element of subordination, as instrument of policy, which

⁷ Ibid., 87.

⁸ Ibid., 88.

⁹ Ibid.

makes it subject to reason alone.”¹⁰ In forming this, Clausewitz ties these metaphysical terms to aspects in the physical world to which we can relate. He pairs *the people* to the blind natural force of primordial violence, hatred, and enmity, *the military* to the play of chance, probability, and creativity, and *the government* to reason and subordination in executing its instrument of policy. How these three interact and consider one another encapsulates the nature of war and is central to our discussion. Clausewitz asserts that the task “is to develop a theory that maintains a balance between these tendencies, like an object suspended between three magnets.”¹¹ He concedes that determining where this balance should lie is a very difficult task indeed, but it forms the core of his strategic military theory. As a final warning before applying his theory to actual forces, he states: “A theory that ignores any one of them or seeks to fix an arbitrary relationship between them would conflict with reality to such an extent that for this reason alone it would be totally useless.”¹²

Clausewitz not only creates a trinity of aspects that define the nature of war, but he also ties these to broad objectives of warfare. He shows that certain things must occur in order to defeat one’s enemy. He advocates the “destruction of his [the enemy’s] army, if it is at all significant... [and the] seizure of his capital if it is not only the center of administration but also that of social, professional, and political activity.”¹³ Clausewitz also warns that, “One must keep the dominant characteristics of both belligerents in mind. Out of these characteristics a certain center of gravity develops... the point against which all of our energies should be directed.”¹⁴ This concept of a unitary center of gravity, based on the dominant characteristic of the belligerent, is, in this

¹⁰ Ibid., 89.

¹¹ Ibid.

¹² Ibid.

¹³ Ibid., 596.

¹⁴ Ibid., 595-96.

writer's opinion, the most misinterpreted aspect of Clausewitz' military theory. It is precisely this misinterpretation by early Airpower theorists and advocates that has imbalanced air forces throughout time. A deeper reading of Clausewitz shows that even he acknowledges that there are certain assumptions required for focusing all energies against a single center of gravity in the hopes of decisive engagement. Clausewitz instructs, "we must be certain our political position is so secure that this success will not bring further enemies against us who could force us immediately to abandon our efforts against the first opponent."¹⁵ Here he is talking about the role of allies on both sides of a conflict, but the logic can be directly applied to the role of the will of the people in a conflict, or the weight of effort applied to one aspect of warfare versus another. Put simply, even if you can smash an enemy's army or seize his capital, you must have a strong political position to ensure you can also affect the will of the people. Otherwise you must acknowledge that use of military force has not been properly matched to the achievement of the desired political purpose. In the Clausewitzian grand strategy, the army, the government, and the people are completely interdependent. There may be a dominant characteristic upon which the predominance of effort may be focused, but this does not mean that it is independent or isolated from the other characteristics or the spirit and general character of the age itself.¹⁶

Clausewitz's use of triads to optimize capability does not end at the grand strategy level. He follows them through all the way to what he terms the tactical level as he explains the role of the major military forces of his time. In book five of *On War*, Clausewitz gives us an 1820's systems analysis of the three types of military forces: infantry, artillery,

¹⁵ Ibid., 597.

¹⁶ Ibid., 594. Again, by referring to the spirit and character of the age, Clausewitz is tacitly referring to the role of human nature in a conflict. However, in this vein he is not merely talking about the aspect of the people solely by the belligerent, but of mankind as a whole.

and cavalry. It is important to note the fact that the concept of balance of forces was a challenge for military theorists of his day as well: "Since maximum strength derives from a combination of all three arms, the question naturally arises what the optimum proportions would be. *An answer is almost impossible.* If one could compare the cost of raising and maintaining the various arms with the service each performs in time of war, one would end up with a definite figure that would express the optimum equation in abstract terms. But this is hardly more than a guessing game."¹⁷ Clausewitz goes on to explain that in trying to balance his three forces, the only ascertainable factor is money; he acknowledges that the value of human life plays a role that cannot be measured in cold numbers. If we accept that there are multiple types of military forces that must be balanced, but that determining this balance depends upon a measureable amount of money and an immeasurable value of human life, the question becomes: How can we determine the optimum proportion?

Clausewitz flips the logic of this on its head; if we can't determine the best balance, at least let us identify detrimental imbalances. He states, "In theory, then, there is an optimum proportion between the arms, which in practice remains the unknown X, a mere figment of the imagination. But it is possible to calculate what would happen if one arm were greatly superior or inferior to the same arm on the other side."¹⁸ Through an evaluation of the levels of forces we can determine where they are unbalanced to a point where the weaknesses in other areas are exposed. It is interesting to note that Clausewitz, though speaking only to the technology of his day, highlights the fact that the predominance of one type of arms can only modify the character of war, not its nature. "These are the ways in which preponderance of one arm or another will affect the operational conduct of a war; yet they are

¹⁷ Ibid., 286.

¹⁸ Ibid., 287.

seldom so complete or decisive that they play the only, or the principal, part in determining the nature of the whole operation.”¹⁹ As we will see in subsequent sections of this thesis, this concept was lost in the fervor created by the promise of airpower in the early 20th century.

A Fuller Examination of Balance

Building on the concepts of Clausewitz, in 1926, J.F.C. Fuller advanced the study of balance in warfare, and developed some triads of his own. Fuller was most interested in how best to fight and win across the entire spectrum of conflict. He believed the study of war is not meant to teach us a truth about the past in order to understand how to fight that same war again. Instead, the study of war is to learn truth about the nature of war and the conditions that surround us, so that we may apply scientifically proven concepts to win future conflicts. “If we can establish a scientific method of examining war, then frequently shall we be able to predict events—future events—from past events, and so extract the nature and requirements of the next war possibly years before it is fought.”²⁰ Much of Fuller’s proposed ‘Science of War’ is built upon triads of concepts. To Fuller, success is determinant on the proper balance and adjustment of the aspects of his triads. Fuller uses multiple levels to explain concepts ranging from the basic nature of man, to the individual fighting capabilities of one soldier. While his triads on strategic goals and operational means are particularly insightful, to fully comprehend them we must first understand how Fuller defines war.

Fuller asserts that if the object of war is a better peace; the cause of war is anything that tips the balance between security, liberty, and prosperity. States create policy that influences these three elements in the form of three objects: national, ethical, and economic. Fuller ties these concepts to the activity they provide: stability as a function of the

¹⁹ Ibid., 288.

²⁰ J. F. C. Fuller, *The Foundations of the Science of War* (London: Hutchinson & Co., 1926), 38.

national object, moral superiority as a function of the ethical object, and commercial prosperity as the function of the economic object. These three objects combined direct the force of political power and it is this political power that determines policy, in peace and war.

To Fuller, the cause of war is merely the resultant of a discontent with the existing conditions of peace—in essence an imbalance of the three objects.²¹ His definition is so simple, and yet integrates so many of the concepts presented by other military theorists published prior to him. War is not merely an expression of “the strong [doing] what they can and the weak [suffering] what they must,” as related by Thucydides in the Melian dialogue.²² Rather, war is a cost/benefit analysis, as it affects the objects of power. Without directly stating it, Fuller acknowledges that war is, as Sun-Tzu calls it, “a matter of vital importance to the state” but with context, not just of survival, but also of security and prosperity.²³ War may be “a continuation of political intercourse, with the addition of other means” but this implies a full understanding of policy to explain both the cause and object for that war.²⁴ As he ties back to Clausewitz’s notion of the “most far-reaching act of judgment that the statesman and commander have to make,”²⁵ Fuller’s logic proposes that the soldier, statesman, and even citizen should be able to understand the nature of war by close inspection of which element of policy is driving the conflict, through application of his scientific method.²⁶ This closely mirrors Clausewitz’s paradoxical trinity of aspects—but Clausewitz did not refine how passion, chance, and rationality developed, or how they were directly tied to the people, the military, or the government. Fuller gives

²¹ Ibid., 69.

²² Thucydides, Robert B. Strassler, and Richard Crawley, *The Landmark Thucydides : A Comprehensive Guide to the Peloponnesian War* (New York: Free Press, 1996), 5.89.

²³ Sunzi and Samuel B. Griffith, *The Illustrated Art of War* (New York: Oxford University Press, 2005), 91.

²⁴ Clausewitz et al., *On War*, 605.

²⁵ Ibid., 88.

²⁶ Fuller, *The Foundations of the Science of War*, 75.

us this grammar. The cause of war may be dissatisfaction with the existing conditions of peace, but knowing which element of power is the wellspring of this discontent determines the object and hence type of war. Fuller does point out some caveats to this logic. It is rare that one singular element is the sole reason for war; often it is a blending of discontents over multiple aspects that drive a nation to war. Additionally, your adversaries may have their own multiple discontents, and these may not be perfectly symmetrical with your view of them. Balancing these aspects and anticipating those of your enemy, according to Fuller, requires good strategy.

Fuller continues the use triads to explain the ways by which nations should fight their wars. His process is moderately effective, and serves as the basis for his concept of strategy. This process is still meant to be a scientific one, linking policy to warfare. His approach to defining a nation's strategy is through spheres of war that traverse the mind, soul, and body. Fuller states that the primary sphere of war is the mental one. Fuller applies the concept of stability, action, and cooperation in order to determine a resultant vector. When applied to the mental sphere, he balances reason, the highest form of consciousness, with imagination to determine will. While his explanation of imagination balanced by reason creating will is somewhat weak, his concept of will being the primary source of power in war is absolutely correct. Fuller asserts that the goal of war is to impose our will upon the enemy with the desired effect of increasing our will, while decreasing the enemy's resistance. While pushing for the will of the commander through military genius, Fuller also acknowledges that the battle of will includes the will of the people, the army, and the government. The more aligned and alike these are, the better reinforced a nation is against its enemy's will. To Fuller, will is the decisive point, politically as the will of the hostile nation, and strategically as the will of the enemy commander.

Fuller also held that will is a rational element operating in the moral sphere of war. Morale is the link between will and action.²⁷ In the moral sphere, will is pulled by both fear and morale, and with enough force produces courage. Again, this concept applies to army, the government, and the people alike. Fuller states that it is of highest importance to ascertain the moral value of an army in order to fully understand the ways at ones disposal and determine the strategy of war. Additionally, the best way to understand an adversary is through the study of his moral sphere and the strength of his will. If will is strong and properly balanced, courage will be strong as well. It is courage that turns thoughts and feelings into action through the physical sphere of war.

To Fuller, the physical sphere of war is the final manifestation of force, the thoughts and feelings of a nation, driven by will, empowered by courage, put into action. Fuller explains that it consists of three parts; offensive power, protective power, and mobility. These should be used in concert to defeat the enemy's plan. Herein lies the true essence of his strategy, the concept that you should establish or have a strong defensive base from which to attack. Your offensive power should be adequate to break the enemy's will by confounding his plan. Your forces must also possess the required mobility and cooperation to shift, as required, in order to attack where there is the largest impact on the enemy's will and plan, with the smallest detriment to your own.

However, war is not won or lost in just one sphere. Fuller states, "Mental force does not win a war; moral force does not win a war; physical force does not win a war; but what does win a war is the highest

²⁷ Fuller uses the terms moral and morale, but for the most part he tends to primarily use the term *moral* for two different conditions: As in moral "of, pertaining to, or acting on the mind, feelings, will, or character" and as in morale "emotional or mental condition with respect to cheerfulness, confidence, zeal, etc., especially in the face of opposition, hardship."

combination of these three forces acting as one force.”²⁸ This conceptual balance, pervasive throughout all levels of political and military action, is central to understanding how to properly balance forces in order to maximize desired effects. Fuller further applies this concept to the tactical level as he, like Clausewitz, discusses the role of infantry, cavalry, and artillery.

Fuller’s triad for fighting is composed of three key concepts: mobility, offensive power, and protective power.²⁹ While he often uses laborious and dated historical examples, there is an enduring concept of what embodies the fighting man, army, or power writ large. In its simplest form, a fighting man should have his sword, his shield, and his legs. These are what give him his offensive power, protective power, and mobility. Fuller believes that the same balance is required for a successful army. “To accomplish this [successful tactical action] we require three orders of troops. Troops that will protect the attackers, troops that can attack, and troops which can pursue. These three orders remain fundamental, and to pull their full weight they must co-operate—that is, work together to attain a common object. In a present-day army these orders are represented by artillery, infantry, and cavalry.”³⁰

Drawing Conclusions on Traditional Concepts of Balance

Determining ratios and proper balance of forces is as much a challenge to Fuller as it was to Clausewitz. “The problem which faces the soldier is how to adapt action to circumstances. Circumstances are the conditions of war; action is the use of the military instrument. The instrument cannot be omnipotent; consequently its powers, however formidable, must be limited. What are these limitations, and how will conditions affect them?”³¹ There is no correct answer for the ratio

²⁸ Fuller, *The Foundations of the Science of War*, 146.

²⁹ Ibid., 119.

³⁰ Ibid., 171.

³¹ Ibid., 187.

required to achieve the desired balance; it will be a product of circumstance. Just as Clausewitz tied his to a 'Factor X' that can't be expressed solely in the amount of money forces cost or the inestimable valuation on life, so too does Fuller tie his requirements to the capabilities of the mental, moral and physical spheres. At this point, readers of both military theorists may be yearning for a definitive force ratio to achieve the sought-after balance, yet neither Clausewitz nor Fuller will provide anything more than the general guidance to have all three types of power.

However, two key themes central to our argument surround both Clausewitz's and Fuller's concepts. Focusing all energy on changing one aspect of warfare at the strategic level, or placing emphasis solely on one type of power at the tactical level, is destined to fail. Fuller goes so far as to say that without proper balance, the art of war will stagnate:

"Whenever a just balance has been maintained between protection, offensive power, and mobility, tactics have flourished, and whenever the balance has been upset, by one or the other becoming paramount or absent, the art of war has either stood still or retrogressed."³²

The second theme is one of flexibility and responsiveness. An unbalanced force limits the military, taking away the ability or option to responsively react if the context of warfare changes. Fuller, writing at the dawn of aviation, highlights the fact that militaries are becoming three-dimensional organizations able to use three mediums of movement: water, air, and earth. He willingly acknowledges that his principles on balance "can be equally well applied to a navy or an air force."³³

Speaking specifically of airpower, Fuller predicts we will see air being able to affect an enemy's mobility, protective power, and offensive power, and indeed strike at the enemy's national will.³⁴ Fuller also predicted the

³² Ibid., 153.

³³ Ibid., 181, 75.

³⁴ Ibid., 234.

next war will have drastic differences due to changes in the forms of movement, which may change the conditions of war. However, understanding the enduring nature of war, and adapting balanced capabilities to these conditions is the means for success. “If mentally we cannot keep pace with the changes in the physical elements of war—the changes in weapons, movement, and protection—then our strategy and tactics will remain obsolete; that is to say, they will not enable us to express the principles of war when once again we are called upon to apply them.”³⁵

Clausewitz and Fuller saw the need for balance both in strategy and force structure; they linked these two concepts together. While a nation’s will was both the ultimate expression of its power, and the decisive point in combat, it was not the only aspect or sphere that could influence the outcome of a conflict. Fielded forces and governments must also be considered and engaged. Similarly, while offensive power could yield the most destructive blows, having mobility and protective power is what enabled this offensive capability. Both Clausewitz and Fuller used the tactical example of balance between infantry, artillery, and cavalry to illuminate their triad arguments. As a new form of combat developed with the emergence of aircraft, the potential to attack a nation’s will directly increased yet again. The allure of using aircraft solely to engage just one aspect, one sphere, and hence develop and employ an imbalanced air force, was very strong when the seeds of traditional airpower theory were sown.

³⁵ Ibid., 259.

Chapter 2

The Prophets:

Nascent Airpower Theory

A new idea must have three qualities: First, it must have dynamic novelty to spark the imagination; something never tried before. It must overcome the entrenched opposition. Second, it must be feasible of fulfillment, by new means either available or potential. Third, it must promise overwhelming capacity to alter the course of history.

Gen Carl A. "Tooey" Spaatz

Few new truths have ever won their way against the resistance of established ideas save by being overstated.

Isaiah Berlin

In 1935, Claire Chennault, then a Captain instructing at the Air Corps Tactical School, gave an insightful look surrounding future airpower employment:

Military authorities of all nations are agreed upon only a few acts in connection with the employment of the air weapon in the next war. It is accepted that it will be employed early and vigorously. Practically all experts appreciate the value of the aerial offensive; very few have any real conception of the defensive. The following questions are being asked all over the world: Should the air force be composed wholly of offensive type (Bombardment) airplanes? Should the air force be balanced (composed of airplanes of all types with the numbers of each type bearing a certain ratio to each other)? Should defensive (fighter) types predominate?¹

¹ Claire Lee Chennault, *The Role of Defensive Pursuit* (n.p., 1935), 12.

Virtually every type of mission an airplane could fly was tested in the first years aircraft saw combat.² Yet, the domain of air was still new, and still considered by both the advocates and detractors of airpower to be something quite unique. It was the explanation of this uniqueness that remained unresolved. Was airpower merely a form of combat in an immature stage, or did it represent something larger, such as a change to the context or nature of warfare itself?

In his groundbreaking work on airpower theory, Air Marshal Giulio Douhet proclaimed, “Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.”³ He felt that airplanes brought forth a new character of war, one that should emphasize the advantages air offered in the offensive. While the character of war may have changed with the expansion of fighting into a new domain, did the nature of war change as well? Airpower conferred distinct advantages on the offensive, but it did not obviate the need to account for protective power and mobility. The disconnect that developed in the inter-war period was based on the fact that many Army and Navy leaders of the time would not even acknowledge the potentially decisive advantages inherent in offensive airpower. Consequently, initial airpower theorists such as Douhet, Mitchell, and Trenchard refined their focus on airpower around independence, equality, and overwhelming offense. By this, they advanced a strategy that was imbalanced, based on imprecise assumptions, and geared toward refighting the last war with new means. There was certainly a breadth of reasons for how initial concepts on airpower theory evolved, but understanding why imbalances were created is key to understanding how to better create balance in the future.

² Phillip S. Meilinger and School of Advanced Airpower Studies (U.S.), *The Paths of Heaven : The Evolution of Airpower Theory* (Maxwell AFB, Ala.: Air University Press, 1997), 3.

³ Douhet et al., *The Command of the Air*, 30.

Douhet's Strategic Imbalance

While numerous roles and missions for aircraft had already been established, in the inter-war period one key mission, one aspect of airpower, became the predominant means through which the air domain would be utilized—strategic bombardment. The promise of strategic airpower seemed to assert that through it, and only through it, future wars could be won. With an inchoate domain, and a vast number of possible uses, why did one strategy (direct attack on the will of the people), and one type of airplane (the bomber), become the unitary focus for many traditional airpower theorists? The answer may have been summarized clearly and painfully by Isaiah Berlin at the beginning of this chapter. Big ideas for change have to be overstated; the strategic capabilities of airpower were often exaggerated in order to garner further relevance for all future airpower functions. As Colin Gray explains, "The established authority of armies and navies explains readily enough why a new form of combat, for a hitherto underexploited geography, should require an extraordinary strategic rationale if it is to escape operational confinement to tasks immediately supportive of war by land and sea forces."⁴ Strategic bombardment at least in theory seemed to be an innovative strategy that would break the stalemates of past wars, if only it were allowed to be independently and decisively employed.

Giulio Douhet was considered by many to be the first theorist to espouse a holistic airpower employment concept. He believed that airpower was revolutionary because it enabled complete freedom of action and direction. He avowed, "The defenses on land and sea will no longer serve to protect the country behind them; nor can victory on land or sea protect the people from enemy aerial attacks unless that victory insures the destruction, by actual occupation of the enemy's territory, of

⁴ Gray, *Modern Strategy*, 231.

all that gives life to his aerial forces.”⁵ Douhet entitled his first work *Command of the Air* because he strongly felt that command of the air was the primary enabler for all further action. Once command of the air was established, then the air forces could carry out their most important mission; strategic bombardment to break the enemy’s will and capability to wage war.⁶ Douhet’s assertion that achieving command of the air, or in today’s parlance, establishing air superiority, should be the first mission of an air force was and is a view shared by almost all airpower theorists. If 100 years of airpower history suggests any empirical “lessons,” it is this one. However, his proposed means to accomplish this, and his utilization of airpower to achieve strategic victory are based on flawed assumptions, and represent a large imbalance of force. Douhet believed firmly in the power of the offensive; “there is only one attitude to adopt in aerial warfare—namely, an intense and violent offensive, even at the risk of enduring the same thing from the enemy.”⁷ Since the domain of the air was so vast, there was little way to defend against aerial attack. In order to protect oneself from aerial attack, the best course of action under Douhet’s theory was to bomb the enemy airfields and aircraft industry, in order to reduce his capability to wage an offensive air campaign against you, as soon as possible.

Once command of the air was garnered through these means, then the full capability of airpower could be used. Since an air force had freedom of action, and could overfly any land or sea battle, it could strike right at the heart of the enemy to “crush the material and moral resistance of the enemy.”⁸ Douhet’s strategy was based on two key concepts, that if accepted would invalidate Clausewitz and Fuller’s theories. First, since air forces could reach beyond ground armies, and

⁵ Douhet et al., *The Command of the Air*, 10.

⁶ Meilinger and School of Advanced Airpower Studies (U.S.), *The Paths of Heaven : The Evolution of Airpower Theory*, 10.

⁷ Douhet et al., *The Command of the Air*, 110.

⁸ Ibid., 128.

sea-borne navies, they could go immediately beyond the Clausewitzian notion of having to destroy the enemy's fielded forces. Second, through direct aerial assault, the industry and infrastructure that supplied and empowered an enemy's military and nation could be attacked directly. Along with this, the people's will could be attacked through use of "violent, uninterrupted action against surface objectives, to the end that it may crush the material and moral resistance of the enemy."⁹ To make this happen, Douhet envisioned an Independent Air Force that was not beholden to any ground commander or scheme of maneuver. Since the application of force to first achieve command of the air and then accomplish the utmost violence required the total effort of this independent air force, any auxiliary aviation, be they protective power or mobility, should be considered *worthless, superfluous, and harmful*.¹⁰ The promise of Douhet's airpower theory was that the state that was best prepared, through a large enough independent air force equipped with strategic bombardment aircraft, would achieve not only command of the air, but be able to apply such force to morale and material that the enemy had no choice but to accept the terms set before him.¹¹

U.S. and U.K. Interpretations

In both the United States and United Kingdom, airpower advocates seized upon these concepts as a strategy to win future wars, and guarantee institutional independence. The British were first to form an independent air service; and the Royal Air Force (RAF) was formed near the end of World War I. Its leadership "subscribed to the view that an independent bombing campaign directed at the vital centers of the enemy's war production and economic infrastructure—particularly if the bombing created widespread popular demoralization—might prompt a

⁹ Ibid., 129.

¹⁰ Ibid., 100.

¹¹ Ibid., 28.

political upheaval and force Germany to sue for peace.”¹² This view for how to end World War I was nurtured and expanded by Sir Hugh Trenchard, first Chief of Staff of the RAF, and its commander from 1919 until 1930. The primary conception of the British airpower strategy revolved around unrelenting offensive strikes by bombers against the industry that empowered the enemy’s military and society. When issues of navigation, range, and accuracy presented themselves, this strategy was adapted to include direct attacks on the workforce and population that manned these industries. To justify this, “using a subjective and unprovable statistic that earned him much (largely deserved) ridicule, Trenchard stated that the psychological effects of bombing outweighed the material effects at a ratio of 20 to one.”¹³ While unproven, the argument was certainly alluring for two main reasons; it appeared to be relatively low risk and low cost. The British airpower strategy in the inter-war period was based on the theory of unassailable offensive strategic bombardment. Since it also reduced the need for a large army or navy to achieve victory, it was touted as economical. This in turn directly pointed to the need for institutional independence to command all of these forces.

While all these arguments were similarly made in the United States, the path they took was somewhat different. Led by the charge of Billy Mitchell, a small group of airpower advocates sought a national culture of air mindedness and institutional relevance on par with the War Department and the Department of the Navy. The initial aspirations of Mitchell were for large fleets of aircraft that could do almost any task, from civil services to most military missions. With so many potential missions and possibilities, control of all assets was of highest

¹² Richard Overy, "The Air War in Europe, 1939-1945," in *A History of Air Warfare*, ed. John Andreas Olsen (Washington, D.C.: Potomac Books, 2010), 28.

¹³ Meilinger and School of Advanced Airpower Studies (U.S.), *The Paths of Heaven : The Evolution of Airpower Theory*, 46.

importance. With full control of all air assets, an air commander could mass these forces most effectively against a strategic target set, independent of ground action. "For Mitchell, the prospects of applying airpower independently, rather than in support of the Army gradually merged with the notion of an air force separate from Army control."¹⁴ This gradual merger also coincided with a gradual build-up of the bomber as the primary offensive weapon, and an acknowledgement of the need for aerial pursuit aircraft to defend against an enemy's air force. Mitchell believed that ground defenses against aircraft were profligate: "Any system of defense against aircraft from the ground alone is fallacious and money put into it, if not spent along carefully considered lines, is merely thrown away."¹⁵ Instead, Mitchell described the need for a system of pursuit aircraft that could defend vital cities, and went so far as to give apportionment recommendations (usually around 1/3 bombardment, 2/3 pursuit) for various strategic locations. While this demonstrated the acknowledgement of at least some tactical balance, because of the strongly held belief of airpower being solely offensive in nature, these pursuit aircraft were not tied to defense of bombardment aircraft in any way.¹⁶

Although his thinking evolved towards an offensive-only mindset, Mitchell did appreciate the concept of balance in airpower in his earlier works: "Our doctrine of aviation, therefore, should be to find out where the hostile air force is, to concentrate on that point with our Pursuit, Attack, and Bombardment Aviation, to obtain a decision over the hostile air force, and then to attack the enemy's armies on land or navies on the water, and obtain a decision over them. Our policy should be to maintain as strong an aviation as is necessary to defend ourselves

¹⁴ Ibid., 88.

¹⁵ Mitchell, *Winged Defense : The Development and Possibilities of Modern Air Power--Economic and Military*, 206.

¹⁶ Ibid., 206-13.

against the combined attack of our probable adversaries. Our method for carrying this into effect should be to have the necessary air forces always ready at the outbreak of war, because this is the first of our arms that will enter into combat and it is upon a favorable air decision that the whole fate of a war may depend.”¹⁷ From the tactical perspective, Mitchell outlined three types of airpower that directly represent Fuller’s triad of offensive power, protective power, and mobility.¹⁸ Furthermore, Mitchell understood that these forces are not independent but must work together: “The three branches of Aviation mentioned above [pursuit, bombardment, attack] constitute the offensive power of an air force. They all work together, and are interdependent.”¹⁹ He wrote this from a tactical perspective, but it shows strong support for a balance of air forces in order to be most successful. In his testimony to congress in 1925, Mitchell used the same infantry/cavalry/artillery analogy as Clausewitz and Fuller advanced to explain how the combat functions of airpower interacted.²⁰ Yet, as with most of the first prophets of airpower, he saw airpower as so strong a force as to obviate the traditional means of combat and change the nature of war.

Mitchell, like Douhet and Trenchard, ended up subscribing to a form of airpower strategy meant to lift combat beyond the exhausting, stalemated ground conflict seen in the first world war. “The advent of air power which can go straight to the vital centers and entirely neutralize or destroy them has put a completely new complexion on the old system of making war. It is now realized that the hostile main army in the field is a false objective and the real objectives are the vital centers. The old theory, that victory meant the destruction of the hostile main army, is

¹⁷ William Mitchell, *Our Air Force, the Keystone of National Defense* (New York,: E.P. Dutton & company, 1921), 15.

¹⁸ Mobility is represented by attack. In this sense, attack aviation is used in conjunction with ground and sea forces to aid their scheme of maneuver and directly enable those forces to advance.

¹⁹ Mitchell, *Our Air Force, the Keystone of National Defense*, 75.

²⁰ William Mitchell, "General William Mitchell Papers, 1907-1946."

untenable. Armies themselves can be disregarded by air power because a greatly superior army numerically is at the mercy of an air force inferior in numbers.”²¹ Mitchell espoused an overwhelming imbalance of strategic effort focused on ‘vital centers.’ Yet Mitchell, like Douhet and Trenchard before him, used the term ‘vital centers’ to cover a broad range of targets, without specific guidance on when, which, or how to target within them. The argument for airpower followed on the promise of all the things it could do, but is never fully explained what it would take to guarantee its promises.

As a result, those who followed these prophets of airpower never fully appreciated what a better balance of forces should have been. The vision of the overwhelming airpower offensive possessed strong allure. As Carl Builder explains in *The Icarus Syndrome*, “The air power theory of the prophets contained all the seeds for the fruit that was to be harvested over the next several decades: the emphasis on the offensive use of air power, on the battleplane or big bomber, and the drive for institutional independence. Its advocates already exhibited attitudes which would remain its scourge right up to the present: a certitude in the universal decisiveness of air power, a disdain for air defense capabilities, and an elitism among pilots.”²² Some were enamored with the ability to successfully win command of the air by attacking the enemy’s airfields, grounded aircraft, and airfield production sites. Some were enticed by the ability to win the strategic victory by directly breaking the will of the people through aerial offensive power. Politicians supported the concept of offensive bomber action, because it promised the most cost effective solution in combat, both in terms of equipment and in lives. Finally, most Airmen of the time supported strategic bombardment because it

²¹ William Mitchell, *Skyways: A Book on Modern Aeronautics* (Philadelphia London,: J.B. Lippincott company, 1930), 255.

²² Builder, *The Icarus Syndrome : The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force*, 66.

was the means to secure more technologically advanced aircraft and systems.²³ Whatever their reasons were, many of the first thinkers on airpower became enamored with the bomber and strategic bombardment. Yet a special few were not swayed by this singular focus.



²³ Ibid.

Chapter 3

The Outliers:

Towards a Total Air Force

While these “prophets of airpower” were expounding and integrating their concepts, there were others whose experiences flying in combat led them to support a more balanced approach to airpower. Some fiercely advocated the use of fighter-type aircraft in order to defend an enemy’s aerial attack, strike and wear down the enemy’s air forces, and patrol the skies in order to maintain air superiority. Others had worked in close conjunction with ground and sea forces, and experienced the synergistic benefits from the use of airpower in close coordination with surface action. There were airmen who understood that strategic bombing alone could not win a war, unless it was protected to enable it to produce its desired effects and those effects were exploited by joint maneuver. In this chapter, I will highlight the concepts and achievements of two Airmen who actively articulated alternative approaches to airpower in the inter-war period— Major Claire Chennault of the United States Army Air Corps and John Slessor, Marshal of the Royal Air Force.

Defensive Pursuit

In 1943, Claire Chennault was a Major General, the leader of the 1st American Volunteer Group, or “Flying Tigers,” and had been on the covers of both *Life* and *Time* magazines. His work with the Chinese, in creating a system of defensive aviation to protect from Japanese aerial attack, helped thwart the Japanese empire’s plans for invasion deep into China, and provided valuable aerial intelligence of Japan itself for

upcoming bomb attacks by U.S. forces.¹ Six years earlier, however, the picture was much different. In 1937, then a captain, Chennault was lying in a hospital bed in Hot Springs, Arkansas, a nub of a man, broken down by the strains of the clash between the supposed unassailability of strategic bombardment and his own thoughts on tactical pursuit. He would soon retire from active duty, and rally his strength as the opportunity to prove his theories came in the form of an offer from Madame Chiang Kai-shek in China.² Chennault's ideas and passion are especially relevant to this discussion, as they demonstrate the weakness of a unitary focus on one aspect of airpower.

Chennault spent much of the early 1930's stationed at Maxwell Air Force Base, first as a student at the Air Corps Tactical School in 1931, then as a member of the cadre and lead instructor in fighter tactics. During that time, he was the sole instructor for the one course on a form of airpower then called pursuit; today we would label it offensive/defensive counter-air. During his time at ACTS, other members of the cadre often moved "to have the fighter course dropped from the curriculum" as it stood in the way of the developing strategic bombardment theory.³ Eventually, these efforts won out, and it was removed from the ACTS curriculum in 1936. Chennault blamed "the bomber boys" as the reason for this; they were consumed with establishing an independent air arm, in the vision of Mitchell: "Bombardment is, of course, the sledge hammer of airpower. With the development of General Billy Mitchell's concepts of strategic bombardment, popularity shifted from the fighter boys, who dominated World War One in the air, to the lumbering bombers, even then growing bigger and faster...the Air Corps would be run from the bias of 'bomber

¹ Claire Lee Chennault and Robert B. Hotz, *Way of a Fighter; the Memoirs of Claire Lee Chennault* (New York,: G.P. Putnam's Sons, 1949), 266-67.

² Ibid., 30-31.

³ Ibid., 27.

generals' [that] had an inflexible orthodoxy all their own and were just as ruthless and unfair in squelching opposition within the Air Corps as the Army and Navy were in attempting to smother the development of all airpower."⁴ Chennault went on to highlight the significant role Douhet had upon the cadre at ACTS: "The Douhet book, which became the secret strategic bible of the Air Corps, painted a brilliant picture of great bomber fleets fighting their way unescorted to targets, with the enemy fighters and flak impotent in the face of their fury."⁵ Chennault acknowledged the significant role of the bomber, but believed that the concept of the bomber always getting through was patently false.

In what was considered his seminal work while at ACTS, Chennault wrote an article entitled *The Role of Defensive Pursuit*, that was published in three parts by Coastal Artillery Journal. Written as a manual on how to counter a large bomber offensive, he implicitly reached back to traditional military theory, when he stated: "this theory [strategic bombardment] is the basis of General Douhet's doctrine of the mass employment of bombardment for winning the victory of offensive action of the air arm alone. If accepted, it established the unassailability and, therefore, the invincibility of bombardment. It establishes bombardment as the first exception to the ancient principle that 'for every new weapon there is an effective counter weapon.'"⁶ The continuing theme of Chennault's works thwarted the bomber advocates' claim of unassailability. Instead, he believed that there was a strong strategic need for pursuit aircraft, to defend against enemy bomber fleets, and that they could balance out an all bomber force.

Chennault made multiple attempts to prove his theories throughout the 1930s. One of the first problems he highlighted was the lack of intelligence. For modern fighters to be effective against bombers

⁴ Ibid., 20.

⁵ Ibid.

⁶ Chennault, *The Role of Defensive Pursuit*, 12.

they would need timely information.⁷ He correctly identified the fact that the bomber advocates' concept of the unstoppable bomber force rested on the assumption that the domain of air was so big that a fighter force of reasonable size could not be scrambled and directed to intercept attacking bombers in a timely or effective manner. Chennault focused on developing command and control systems to help maximize the effectiveness of defensive pursuit, "A good part of my time at the tactical school was spent studying warning-net systems developed by the English and Germans and devising improvements to aid fighter interceptions."⁸ His studies culminated in the exercises at Wright Field which he wrote about in *The Role of Defensive Pursuit*. From these exercises he derived two principal lessons:

1. Defending pursuit could make interception of attacking bombardment before the bombers reached their target if furnished timely information and if the interception area had sufficient depth to allow for necessary time factors.
2. Bombardment, flying deep into enemy territory, required friendly fighter protection to prevent heavy losses if not utter failure of the mission.⁹

Despite showing these weaknesses in the strategy of overwhelming bombardment forces, Chennault's arguments fell mainly on deaf ears. As Chennault explained, "Incredible as it may seem now, the issue then was not how many or what kind of fighters we should have but simply whether there should be any fighters at all. *Pilots who merely contended that a well balanced air force needed some fighters were bitterly scorned by the bomber boys* [emphasis added]."¹⁰ Chennault went on to explain that the office of the Chief of Air Corps adopted the slogan, "Fighters are obsolete," in the late 1930's and the development and procurement monies were curtailed as a result. Writing post-WWII, he remarked that

⁷ Chennault and Hotz, *Way of a Fighter; the Memoirs of Claire Lee Chennault*, 21.

⁸ *Ibid.*, 23.

⁹ Chennault, *The Role of Defensive Pursuit*.

¹⁰ Chennault and Hotz, *Way of a Fighter; the Memoirs of Claire Lee Chennault*, 26.

in 1943 there were “frantic efforts to develop a long-range escort fighter. Without the long-range escort fighters the daylight bombing of Germany would have ended in bloody failure before the year was out.”¹¹

Unfortunately, Chennault himself was not as perfectly balanced or as prescient as he claimed to be in his memoir. While certainly advancing the need for balanced airpower, or at least a recognition of the value of pursuit aircraft, there are some disconnects between the tactics espoused in *The Role of Defensive Pursuit* (1935) and the ex post facto claims in *Way of a Fighter* (1959). Surely Chennault’s understanding that bombers did not change the nature of warfare, but rather the context, allowed him to look for ways to defeat the imbalanced strategy that Douhet and Mitchell had presented. However, his sole focus was on having defensive fighters, primarily in key regions of the U.S., to protect national assets from the bombers of potential adversaries. In this, he was not far removed from some of Mitchell’s early concepts and force ratios. Chennault’s emphasis was on advancing fighter technology in areas such as speed, altitude, and firepower, in order to defeat the advancing technology in bombers. However, it was his recognition that information was the key to ensuring fighters would be able to intercept the bombers in a timely manner that was his greatest contribution. Through this, he was able to create a scenario where command of the air could be achieved through defensive pursuit, instead of through relative attrition based on air to ground bombing. In the mid 1930s, he did not spend much time addressing the concept of fighters escorting bombers to prevent the enemy doing the same. Additionally, he did not put much emphasis in possible air to ground roles for fighter planes once command of the air is established.

Instead, it is through his experiences in China that he developed some of those concepts, as he saw firsthand how his fighters could be

¹¹ Ibid., 24.

used to interdict Japanese supplies from the mainland of China, once they are no longer needed to perform defensive pursuit.¹² “Next to maintaining air superiority over China, which was a requisite for any operation, Japanese shipping remained the primary target of the 14th Air Force throughout the war.”¹³ In another moment of hindsight from his memoirs, Chennault remarked: “It is interesting to note that the shrewd gentlemen of the Strategic Bombing Survey concluded that the first B-29 missions could have been expended more effectively if they had used their extremely long range to spot shipping targets for submarine attacks rather than in sporadic direct bombing of Japanese steel mills, aircraft factories, and other so-called strategic targets. This is of course heresy to the ‘bomber radicals’.”¹⁴ Chennault certainly made passionate arguments for a counterbalance to strategic bombardment; his exercises in the 1930s and combat experiences in China certainly proved his point that strategic bombardment alone would not win a war. However, there was another military man whose experiences prior to WWII helped shape an even more balanced approach to airpower, incorporating strategic bombardment, command of the air, and close aerial action in support of land forces.

Air Power and Land Armies

It is interesting to note that all of the preceding thinkers on airpower started out as army officers, and then became aviators at some point later in their careers.¹⁵ However, for Sir John Slessor, the only path to military service was through aviation, as his legs were infirm from polio. Nevertheless, Slessor began a long and successful career in the RAF as a pilot in 1915. What is striking about this is the fact that more than any other, he realized the value in balanced airpower, and the

¹² Ibid., 245-67.

¹³ Ibid., 265.

¹⁴ Ibid.

¹⁵ Additionally, it has been speculated that while becoming the General in charge of the Italian Air Force, Giulio Douhet himself never actually learned to fly.

interdependent nature of airpower and land armies. His experiences flying and fighting along the entire spectrum of conflict, from total war in WWI to colonial enforcement in Waziristan and India, gave him early insight into the flexibility and mobility of airpower. Furthermore, he saw airpower holistically; it could have a decisive role in certain instances, but could very easily be a key supporter to ground maneuver in others. In 1935, Slessor wrote *Air Power and Armies*, based upon a series of lectures he gave while instructing at the Staff College at Camberley.¹⁶ In it, he acknowledged the overwhelming power of strategic bombardment and the necessity of defensive pursuit, but expanded and integrated these concepts into an interdependent system that also incorporated airpower used to directly and indirectly in support the ground scheme of maneuver.

Like many of the other airpower thinkers before him, Slessor saw enormous potential in the exploitation of the domain of air. However, his central argument for the use of airpower in support of ground forces was based on a different interpretation of the capability of airpower. To Slessor, the critical capability of airpower was its mobility. Though others had similarly made this assertion, Slessor did not tie mobility directly to a given mission or role; instead, he saw mobility as the enabler for flexibility and adaptability of aerial mission to meet the needs of the conflict itself. “The only other important difference, in a strategical sense, between armies and air forces... arises out of the same quality of mobility in the third dimension; and is that an air force is not committed to any one course of action.”¹⁷ Unlike an army, which may have limited depth or range, airpower “can switch, literally almost at a moment’s notice, from one objective to another several hundred miles away, from

¹⁶ John Cotesworth Slessor, *Air Power and Armies* (Tuscaloosa: University of Alabama Press, 2009), i.

¹⁷ *Ibid.*, 9.

the same base.”¹⁸ One of his seemingly obvious yet extremely relevant conclusions from this was that “future staffs must think wider, and use larger maps.”¹⁹ While surely this was a direct physical recommendation, it serves as good guidance for thought on what airpower can and should do with such mobility and freedom of action.

Slessor felt that while air superiority was important, “Air superiority is only a means to an end and, unless it is kept in its proper place as such is liable to lead to a waste of effort and dispersion of force.”²⁰ He was careful, however, to take specific time explaining the role of air superiority, recommending a balanced approach for its use. “For fighters, but for the fighters alone, the destruction of enemy aircraft may be said to be the primary objective... the influence of their activities is of vital importance—but only as a contribution to the end, and not as the end itself.” For Slessor, the air superiority mission was an air support mission, albeit a very important one.

It is interesting that he gave the caveat of a single-mission aircraft only to the fighter. Yet this also reveals Slessor’s belief that aircraft could and should fly multiple mission types. As he broke down what air superiority could and could not do, Slessor pointed out the fleeting nature of this mission, explaining that air superiority was not a permanent condition, and that those performing this mission should strive to attain it at the decisive point. This decisive point was where, once air superiority is established, the other functions of airpower (and by extension land and sea power) could be brought to bear under the protection that air superiority provides.

He went so far as to advance a second principle of air superiority that stated, “Offensive against the vital centres of the enemy must be supplemented in varying degree by direct action against hostile air

¹⁸ Ibid., 204.

¹⁹ Ibid.

²⁰ Ibid., 10.

forces.”²¹ In other words, Slessor conceptualized the modern day concepts of ‘localized air superiority’ and ‘composite force packaging.’ These ideas were very different than the linear, annihilation strategies the prophets of airpower envisioned through strategic bombing. In the end, Slessor had a decidedly succinct view on this air support role— “[Air superiority] means the capacity to achieve our own object in the air and to stop the enemy achieving his.”²²

Attacking directly at the concept of strategic bombardment as the sole means to win a war, Slessor averred, “No attitude could be more vain or irritating in its effects than to claim that the next great war—if and when it comes—will be decided in the air, and in the air alone.”²³ For Slessor, airpower would change the way future wars would be fought, but this change would be dynamic. The trench warfare style war would not be seen again, nor would a purely strategic bombing campaign solve its problems.²⁴ He saw value in a strategic bombardment against vital centers, but did not contend that they are absolute or all-inclusive. He considered the term vital center to be a bit imponderable. Slessor explained that vital centers could be military supply lines or field forces that needed to be protected in order to continue to fight, or population centers that would, for political or social reasons, need to be defended.²⁵ He warned that it was up to the politician to decide, and the military man to take into account, which vital centers are to be attacked.²⁶ Finally, he used a wonderful analogy to explain why total destruction strategies against vital centers aren’t necessary: “Strictly speaking a vital

²¹ Ibid., 25-26.

²² Ibid., 4.

²³ Ibid., 214.

²⁴ Meilinger and School of Advanced Airpower Studies (U.S.), *The Paths of Heaven : The Evolution of Airpower Theory*, 62.

²⁵ Slessor, *Air Power and Armies*, 16.

²⁶ As history shows us, during the combined bomber offensive there was a disparity between the British and U.S. air forces as to which was the more important vital center – population or industry.

centre is an organ or centre in a man, an army, or a nation, the destruction or even interruption of which will be fatal to continued vitality. Note that actual *material destruction* of a vital centre is *not* essential in order to be fatal. Thus a man's windpipe is a vital centre; yet it is not necessary to cut it but only temporarily to stop air getting through it in order to kill that man [Author's original emphasis]."²⁷ Having set forth the concepts that air superiority is only a means to an end, and strategic bombardment is not the sole means of employing airpower, Slessor presented a third important role for airpower, attack closely coordinated with the ground forces.

Slessor made the case that while airpower was revolutionary, it was not so much so that there would be no land war. In tacit acknowledgement of Clausewitz, he asserted that the next big war will still have a ground battle phase, and the enemy's army will have to be destroyed. Continuing on with his premise of choking the windpipe of the adversary, Slessor envisioned using airpower to cutoff the enemy's supply lines. "The primary task of the air striking force in a land battle must be to isolate the area attacked from reinforcement and supply; and thus to ensure that the impetus of the attack on the ground is not checked by enemy reserves rushed to the threatened point by road or rail."²⁸ Through this they would become paralyzed, and allied land forces could handily destroy their enemy on the field of battle. In order to make this happen, land and air commanders had to work closely together toward common goals: "Land and air operations must be deliberately planned to get the best out of each other; and the plan of campaign on the ground, whether in attack or defence, may be profoundly influenced by the air factor."²⁹

²⁷ Slessor, *Air Power and Armies*, 16.

²⁸ *Ibid.*, 212.

²⁹ *Ibid.*

These operations, planned to get the best out of each other, were meant to optimize the best aspects of both land and ground forces. They were not meant to subordinate airpower to the ground commander for missions such as close air support and armed overwatch.³⁰ In fact, Slessor warned “action against enemy air forces in a land campaign is a diversion and a measure of security—and never the object.”³¹ Tying in his concept of a larger map and broader thinking, Slessor believed that offensive airpower was best used when far enough from the front line of troops to give depth to the battlefield and time to react, but coordinated enough that efforts could be taken advantage of by land forces in subsequent engagements. “For where other weapons have enhanced the capacity of men to kill each other in battle, and increased the depth of the battle-field, the AIR may stop men or their supplies arriving at the battle-field at all.”³² In essence, John Slessor was the father of modern-day interdiction.

Unlike some of the others discussed so far, Slessor did believe in the value of the other functions of airpower. He would go on to work for Hugh Trenchard, and actively supported the strategic bombing campaign in World War II. His concepts of air superiority correctly showed that while it was a very important enabler for future action, by itself it achieved little.³³ Slessor’s most significant contributions were two-fold. First, his experiences taught him that the nature of war had not changed, but that it would continue to be fought along a spectrum of possibilities for conflict; there was no one mission airpower could

³⁰ Armed overwatch is current terminology for close coordinated sorties ready to deliver ordnance, but not necessarily as CAS. It is not in doctrine as of yet, but is currently a commonly used mission delineation. Example: <http://www.airforce-magazine.com/MagazineArchive/Pages/2009/January%202009/0109surge.aspx>

³¹ Slessor, *Air Power and Armies*, 28.

³² *Ibid.*, 200.

³³ John Cotesworth Slessor, *The Central Blue; Autobiography* (New York,: Praeger, 1957).

perform that would address all potentialities. As such, airpower's greatest strength was what he termed mobility, or in modern-day terms its flexibility and adaptability to different potential missions. Second, he acknowledged that airpower may not be able to win every land war. If one was to occur, airpower could decisively be employed to ensure victory on the ground, if properly used in conjunction with ground forces: "The air is only one, but it is-the most decisive one, of a number of factors favouring the rise of the small, highly mobile, hard-hitting, armoured and mechanized army of to-morrow."³⁴



³⁴ Slessor, *Air Power and Armies*, 214.

Chapter 4

The Operators:

Balance Put into Practice

The three branches of Aviation... [pursuit, bombardment, attack] constitute the offensive power of an air force. They all work together, and are interdependent.

Billy Mitchell

Upon reading Chennault's *Way of the Fighter*, then retired General George Kenney was compelled to write Chennault a personal letter lauding his concept of balance of air forces:

In regard to the discussion of the fighter versus the bomber, there is little to say except that it is as fruitless as to argue whether a boxer needs a right hand or a left hand. He needs both. The right hand, the bomber carries the punch that gains victory, the left hand, the fighter, jabs to knock the opponent off balance, to prevent that opponent's right being used effectively, and at the same time blocks to protect his own right so that its winning blow will not be interfered with. While both the fighter and the bomber may have missions independent of each other, the decisive missions have been accomplished when the boxer had two hands and used them properly.¹

Kenney put the three aspects of airpower— air offense, air support, and air service— into simple perspective relative to one another. Air offense through bombing, air support through air-to-air combat, and air service through ground attack, all must be balanced to win the fight. Kenney knew this to be true based on his experiences during World War II.

World War II served as the most rigorous test for many of the theories of airpower. The United States Army Air Forces primary strategy

¹ Claire Lee Chennault, *Claire Lee Chennault Papers, 1941-1954*.

of independent strategic bombing during WWII is one that has been documented, evaluated, and critiqued many times in the sixty-five years after its conclusion. However, there is a far less published on those who took a more balanced approach to airpower; those who incorporated what aspects of airpower they had available in order to best meet the needs of the joint mission. As historian Phil Meilinger has pointed out, the storehouse of memoirs and biographies of great US airmen is remarkably bare.² However, there are excellent biographies of two airmen who were able to maximize the effects of balanced airpower: Major General Elwood “Pete” Quesada and General George Kenney.³ These two officers were not necessarily air power theorists. Instead they were operators, men who were able to balance the functions of airpower because they could also balance strategic theory with operational necessity.

Quesada

Elwood ‘Pete’ Quesada entered the U.S. Army Air Corps in 1924 unfettered by preconceived notions of airpower. His pre-war experiences were quite unique; he was initially trained to fly by two different future Air Force Chiefs of Staff, Nathan Twining and Thomas White. As a second lieutenant, along with Ira Eaker and Tooey Spaatz, he was a part of the crew of the *Question Mark*, the world record-breaking aircraft that stayed aloft for over 150 hours, performing 43 in-flight refueling and replenishments.⁴ At one time he was the personal pilot for George C. Marshall; at another he was on Hap Arnold’s staff. Along the way he got to see much of the United States, the Army, and the Air Corps as it

² Phillip S. Meilinger and Air University (U.S.). Press., *Airmen and Air Theory : A Review of the Sources* (Maxwell Air Force Base, AL: Air University Press, 2001), 3-4.

³ These two, by no means, are the only airmen who were effective in applying balanced airpower. O.P. Weyland and John Cannon also ran successful TAC air campaigns in Europe.

⁴ Richard K. Smith and Air Force History and Museums Program (U.S.), *Seventy-Five Years of Inflight Refueling : Highlights, 1923-1998* (Washington, D.C.: Air Force History and Museums Program : U.S. Govt. Printing Office distributor, 1998), 6.

developed. He was a student at both the Air Corps Tactical School (ACTS) at Maxwell Field and the Command and General Staff School (CGSS) at Fort Leavenworth.⁵ It is quite interesting that given his experiences, and interactions with future Air Force leaders, he took a broad and balanced view upon airpower when given the reins of command in WWII. As biographer Thomas Hughes explains, “Quesada's formative experiences allowed him a bird's-eye view of Army disputes and forever after provided a perspective that placed the Air Corps in context against a larger backdrop. Such outlooks were rare indeed in the 1930s, and they became the hallmark of Quesada's career.”⁶

Of all his early influences, Quesada's school years seemed to have the biggest impact on his approach to airpower during World War II. While a student at ACTS in 1935, the curriculum there was overwhelmed with classes on strategic bombardment. A rift had developed between the predominant group of instructors who saw the future of airpower encapsulated in Douhet's notion of independent strategic action, and those such as Chennault, who emphasized other conceptions of airpower such as defensive pursuit or attack aviation. The students of ACTS were not oblivious to this rift amongst the faculty. “As Quesada saw it, Chennault's quarrels with other faculty members highlighted just how contentious flyers could be, not only with the General Staff, but also among their own who did not share an enthusiasm for bombardment theory.”⁷ Quesada, in a personal interview with historian Tom Hughes, related that ACTS became increasingly “orientated toward strategic bombardment while I was there. I thought it was overstated then, but it

⁵ Rebecca Grant, "Quesada the Conqueror," *Air Force Magazine*, April 2003, 76-80.

⁶ Thomas Alexander Hughes, *Over Lord : General Pete Quesada and the Triumph of Tactical Air Power in World War II* (New York: Free Press, 1995), 50.

⁷ *Ibid.*, 57.

didn't result to me getting in any debate at Maxwell. I did not become a jealous advocate of it either way.”⁸

A moderated view of airpower was probably Quesada's best takeaway from his time at ACTS, as he then progressed to the Army's Command and General Staff School (CGSS). At CGSS, the students from the Air Corps were typically a segregated bunch, but Quesada instead integrated with his fellow officers from other branches of the Army. In exercises, he sought to weave possible applications of airpower with land operations. In a note to himself, he wrote, “future war will require all sorts of arrangements between the air and the ground, and the two will have to work closer than a lot of people think or want.”⁹ Quesada's view was most fortunate; it would serve him well in World War II.

Quesada first saw action as the deputy for the Coastal Air Force in North Africa and Italy during Operation Avalanche. The command's primary mission was to protect Allied logistics and interdict Axis supply lines.¹⁰ During his time there, he was exposed to the challenges and difficulties of merging air action with ground and sea forces. One of the most important lessons learned during Operation Avalanche was the ratio of fighter to bomber usage during air to ground operations. While pre-war doctrine had assumed that bombers would be the primary aircraft, instead they conducted only a third of the operations with fighter aircraft performing the remaining two thirds.¹¹ Quesada's operational experience taught him the value of communications, the effect of interdiction, and the necessity of the correct balance of aircraft able to perform multiple missions. Quesada remembered these lessons when he moved to take charge of IX Fighter Command in 1944.¹²

⁸ Ibid., 58.

⁹ Ibid., 63.

¹⁰ Ibid., 90.

¹¹ Ibid., 107.

¹² Ibid., 109.

Quesada continued to learn new ways to quickly apply balanced airpower, in order to best aid the ground scheme of maneuver during the invasion of Normandy. Even as strategic bombing advocates still held out for German exhaustion and capitulation through their campaign against industrial targets, Quesada's aircraft were attacking enemy fielded forces. In Italy, TAC air operators had seen that bombing alone was not enough; strikes had to occur in conjunction with ground force action, in order to get the best effect. In a memo to Quesada, General John Cannon wrote: "Air power alone cannot defeat a highly organized and disciplined Army, even when that Army is virtually without air support of its own. It cannot by itself force a withdrawal by drying up the flow of command supplies... it cannot absolutely isolate the battle field from enemy supply or reinforcement. It cannot absolutely guarantee the immunity either of our forward formation or back areas."¹³ In order to be successful, airpower had to innovate and integrate, and Quesada was often at the lead of major air-ground innovations.

Quesada was instrumental in converting both his planes and his aviators' mind-sets toward air-to-ground missions. He trained his pilots to dive-bomb with increased accuracy. Also, he added bombs and rockets to traditionally air-to-air aircraft, and interspersed traditional roles and missions for fighters, fighter-bombers, light bombers, and medium bombers.¹⁴ He was even able to show how lighter aircraft could accomplish some of the missions traditionally held for heavy bombers, when IX Fighter command, using P-47s and B-26s, was able to drop every railroad span on the Seine river by D-Day.¹⁵ Quesada was one of the first Airmen to show balanced effects could be achieved not just with a mix of different aircraft, but with properly trained crews employing one aircraft in multiple roles.

¹³ Ibid., 139.

¹⁴ Ibid., 125-29.

¹⁵ Ibid., 131.

Quesada also heavily employed a system of communications and interaction with his ground equivalents. He used air liaison officers, placed within army units, who relayed information in a vernacular the supporting pilots could understand. Quesada even went so far as to place radios and operators inside two Sherman tanks that Omar Bradley had given him, in order to coordinate air action with heavy armor during Operation COBRA.¹⁶ Quesada used not only a system of direct communication between air and ground units, but he also did so within the command as a whole, allowing him to responsively mass airpower to meet emerging needs, rather than making ground forces wait hours or days. Furthermore, he took Chennault's conceptions of communication beyond defensive pursuit. In addition to ensuring that fighters could defend against bombers in a timely manner, he saw to it that fighter-bombers were used to interdict, paralyze, and if necessary, directly support allied ground troops. Coincidentally, Quesada's actions also showcased some of Slessor's thoughts on air superiority. Through use of effective air-to-air combat, Quesada first made sure that enemy fighters could not impact friendly ground forces. As soon as he had the Luftwaffe reeling, he used these same fighters to continue to attack airfields and supply depots. If there was not an air superiority mission to perform, fighters were cleared to strafe and attack enemy ground troops as well. In essence, Quesada proved that there was more use for a fighter than just air-to-air or bomber escort.

Not all aviators understood, or even submitted to this logic. For some, it was too different from what traditional airpower theory stated. For others, it represented a dangerous subordination of air to the ground forces. Neither Quesada nor the ground commanders he worked with, saw it this way, and he was quick to dismiss those on his staff who

¹⁶ David E. Johnson, *Fast Tanks and Heavy Bombers : Innovation in the U.S. Army, 1917-1945*, Cornell Studies in Security Affairs (Ithaca: Cornell University Press, 1998), 213.

thought otherwise. "In a command responsible for close air support, he particularly disliked Airmen who were wedded to the primacy of independent bombardment. 'I had little patience for those who turned out quite parochial regarding air-ground matters. I tried at first to move them around a bit, but eventually I sent the bad ones home. It usually meant the end of their careers.'"¹⁷ Finally, one of Quesada's primary lessons learned from his experiences of World War II was the importance of goodwill through direct personal interaction: "Of all the lessons we learned about tactical air operations, perhaps the most important is that the air commander [and] his group and squadron commanders must have [a] sincere desire to become part of the ground team. The Army must, of course, have the same dedication to reciprocate, and this close liaison can only come from close day to day contact—especially at command levels."¹⁸

Kenney

In the Pacific Theater, there was an Airman, who since day one, had made it his job to sincerely be a part of the joint team through face-to-face interaction with his boss. General George Kenney, Commander of the Allied Air Forces in the Southwest Pacific Theater, was the prototypical Joint Forces Air Component Commander (JFACC), even before such a position was doctrinally defined.¹⁹ An innovator and an integrator, he demonstrated the best attributes of an Airman; one who could flexibly apply airpower to meet the short-term needs and long-term goals of his Joint Force Commander, General Douglas MacArthur. Biographer Thomas Griffith relates that Kenney wanted operators in his command who were "aggressive, energetic, and flexible individuals capable of leading and concerned foremost with getting on with the

¹⁷ Hughes, *Over Lord : General Pete Quesada and the Triumph of Tactical Air Power in World War II*, 116.

¹⁸ *Ibid.*, 296.

¹⁹ Salvatore A. Angelella, Maj, "A Prototype Jfacc: General George Kenney" (School of Advanced Airpower Studies, 1994).

war.”²⁰ Yet, Kenney himself was a superlative operator in his own right, taking an assertive, balanced approach to the application of airpower that demonstrated a maximization of its effects.

Kenney was exposed to the multiple potentialities of airpower during his service in World War I. As with the other previously mentioned aviators, Kenney was educated on the concepts of Mitchell, Douhet, and the strategic bombardment theory of the interwar period. However, his early views on aviation took a decidedly balanced course. During his time as an instructor at ACTS, he focused on attack aviation, proudly claiming that he “was the papa of attack aviation,” through tactics development, teaching and authorship.²¹ Taking a page from Slessor, Kenney’s concept of attack aviation revolved around the idea that while forces at the front might be heavily dug in or defended, forces in the rear were particularly vulnerable to aerial attack. He felt that commanders should consider the potential for air to stop the enemy from “arriving on the battlefield in time to influence the action.”²² Kenney considered this mission--what we today call interdiction--to be an important aspect to airpower that required specific attack aircraft.²³

Kenney weaved this mission into his total vision of how airpower might be employed in the future. In his Army War College paper entitled *The Proper Composition of an Air Force*, Kenney presented a decidedly balanced approach to airpower that would serve as guide to his future actions in the Pacific. In short, Kenney stated that the first action was to gain air superiority to allow freedom of action, while denying this freedom to the enemy air force. Concurrently, aircraft should be used to find and

²⁰ Thomas E. Griffith, *Macarthur's Airman : General George C. Kenney and the War in the Southwest Pacific*, Modern War Studies (Lawrence, Kan.: University Press of Kansas, 1998), 59.

²¹ Ibid., 27.

²² Ibid.

²³ There is no indication that either Slessor or Kenney first focused on attack aviation/Interdiction. It is my contention that based on their WWI experiences, they came to similar conclusions in parallel to one another.

strike enemy forces, fleets, supplies, and lines of communication.²⁴ In essence, Kenney saw value in simultaneous air support, air offensive, and air service. "An Air Force is not merely a collection of airplanes anymore than a certain number of men constitutes an army." An effective air force, Kenney argued, needed a variety of aircraft to accomplish a wide range of missions, *simultaneously*.²⁵

Not only were a variety of aircraft needed, but also they had to be employed properly. Kenney was sent to Spain to observe firsthand the capabilities of airpower during the Spanish Civil War. There he saw how easily airpower could be squandered: " 'Neither side has shown any real appreciation of Air Power,' he flatly asserted. Bombardment, observation, and pursuit aircraft had all been repeatedly 'diverted' from their proper roles in order to carry out attacks on dispersed frontline troops. The 'alibi' given for such a frittering away of air power was a shortage of artillery on the battlefield, but the 'more likely reason' was 'a lack of any clear conception of the proper employment of air forces, in which such a diversion of resources is a serious error.'"²⁶ In a conflict where the results of the devastating bombing of the Basque town of Guernica in 1937 were mistakenly seen as a validation of Douhet's theories, Kenney saw that strategic bombardment alone could not win a war, and that airpower could easily be misspent without coherent, controlled action.²⁷ Kenney was not the only one to come these conclusions. In 1940, Hap Arnold sent Kenney to Europe as an assistant air attaché. There he saw that the Luftwaffe had learned from their

²⁴ Lt Col. Peter R. Faber, "Interwar Us Army Aviation and the Air Corps Tactical School: Incubators of American Airpower," in *The Paths of Heaven : The Evolution of Airpower Theory*, ed. Phillip S. Meilinger and School of Advanced Airpower Studies (U.S.) (Maxwell AFB, Ala.: Air University Press, 1997), 199.

²⁵ George C. Kenney, "The Airplane in Modern Warfare," *U.S. Air Services*, July 1938 1938, 17-22.

²⁶ Stephen Budiansky, *Air Power : The Men, Machines, and Ideas That Revolutionized War, from Kitty Hawk to Gulf War II* (New York, N.Y.: Viking, 2004), 211.

²⁷ James S. Corum, *The Luftwaffe : Creating the Operational Air War, 1918-1940*, Modern War Studies (Lawrence: University Press of Kansas, 1997), 198-200.

Spanish experience, and created a balanced fighting force that capitalized on coordinated air and ground maneuver. This led Kenney to passionately assert that the U.S. aircraft procurement plans were behind and misfocused.²⁸ He would soon get the chance to overcome and work around these deficiencies, and apply balanced airpower in the Pacific Theater.

From the beginning of his time in the Pacific, Kenney took on his role as an assertive and innovative leader of Airmen, all the while working hard to be closely in line with the needs of General MacArthur. One of Kenney's greatest strengths was his incessant drive to produce more sorties and mass his aircraft to achieve desired effects. Faced with fractured forces spread thin, Kenney focused on clear control of his forces and innovation to overcome aircraft shortfalls.

Kenney displayed inventiveness prior to assuming his leadership role in the Pacific. He was the first to place machine guns in aircraft wings, the first to attach parachutes to bombs to create bomb trail displacement, and he experimented with cluster munitions in the inter-war period.²⁹ As he and his aide made their way to Australia to take command in 1942, they even used a stopover in Nandi to develop skip-bombing techniques.³⁰ This type of innovation would be encouraged during his command, as troops refined new techniques for air to ground and air to surface attacks, and Airmen heavily modified aircraft in order to match mission needs. The motivation for this innovation remained the same: trying to best further the war effort.

This sense of innovation and the concept of balance in airpower went hand in hand. "Kenney created an atmosphere within his

²⁸ Thomas E. Griffith, *MacArthur's Airman : General George C. Kenney and the War in the Southwest Pacific* (Lawrence, Kan.1998), 41.

²⁹ George C. Kenney, *General Kenney Reports : A Personal History of the Pacific War*, Usaf Warrior Studies (Washington, D.C.: Office of Air Force History, U.S. Air Force, 1987), xiv.

³⁰ *Ibid.*, 21-22.

organization that allowed creative thinking to flourish.”³¹ Kenney did not have the luxury of hundreds of bombers or fighters at his disposal, nor did his airfields have the level of defenses seen in the European theater. His aircraft and airfields were within range of enemy forces at all times, and because of this his air campaign had to be decisive against the Japanese air forces.

Fortunately, according to Kenney, the Japanese “did not know how to use [their] air decisively,”³² and were slowly rolled back toward Japan through coordinated maneuver with MacArthur’s ground campaign. In order to be successful, Kenney focused on those concepts he had espoused in his writings of the interwar period. He used his fighters to garner reconnaissance and local air superiority, and then used all available types of aircraft to seek out and destroy the enemy aircraft and airfields in massed attacks. However, once he had done so, he used his aircraft to capitalize on opportunities to interdict enemy forces, especially seaborne supplies and troops, and he used what bombers he had to press one step ahead of the ground forces. This kept the Japanese armed forces off-balance, and helped to shape the ground operations.

Kenney did not merely use his fighters and bombers for air superiority, attack, and interdiction, he also conducted effective strategic bombardment as well. He expected to receive the first B-29s as well, so that he could strike at enemy lines of communication and logistics even further beyond the range of the airplanes at his disposal. Kenney had a long-reaching commander’s vision, but he saw these bombers being used to deny Japan the natural resources that powered their war machine, instead of directly attacking population centers to influence their will.³³ He understood that airpower could make valuable contributions to the

³¹ Griffith, *Macarthur's Airman : General George C. Kenney and the War in the Southwest Pacific*, 237.

³² Kenney, *General Kenney Reports : A Personal History of the Pacific War*, 69.

³³ Griffith, *Macarthur's Airman : General George C. Kenney and the War in the Southwest Pacific*, 148.

total war effort when balanced and matched closely to the supreme commander's desired scheme of maneuver.

Kenney was not wedded to the concepts of strategic or tactical airpower as separate or independent commands. Biographer Thomas Griffith explains Kenney's command structure:

Although Kenney's command had a bomber command and fighter command, these were for administrative and logistical convenience, not combat operations. For combat he combined his aircraft in the air task forces according to the mission. The task forces could be all of one kind of aircraft, or a mix of fighters, bombers, and transports. The makeup depended on the requirements of the mission. Like some other officers, Kenney did not believe that an air command should be divided. An airplane should not be considered either a tactical or a strategic airplane; one day it "may drop... on targets ten miles away and the next day you may be working 5,000 miles away, and to say that one is tactical and the other strategic really doesn't tell the story."³⁴

Sadly, this type of thinking on airpower would be markedly absent for the fifty years following the conclusion of World War II.

As with Quesada's experiences, Kenney was successful through strong personal relationships with the ground commanders. He and his immediate subordinates were able to establish these through frequent face-to-face meetings.³⁵ The application of airpower was so successful that MacArthur would later remark that the purpose of his surface operations was to advance his bomb line.³⁶ This statement demonstrates how good airpower can be the main effort of a joint campaign. Kenney's achievements were only possible through balanced airpower, finely tuned to meet the commander's needs.

Kenney's leadership through the operations of the Battle of Bismarck Sea served as a model example for all of his concepts on

³⁴ Ibid., 118.

³⁵ Ibid., 242.

³⁶ Military Analysis Division, "Air Campaigns of the Pacific War," in *The United States Strategic Bombing Survey* (Washington, 1947), 18.

integrated airpower and innovation put to practice. With a composite strike force of fighters, attack planes, light and medium bombers, the Fifth Air Force was able to successfully sink or damage a convoy of 22 ships, including 4 destroyers, and claim victory over 55 aircraft, all through integrated air action. Larger than the statistics on losses was the fact that the Japanese were unable to reinforce Papua New Guinea, and four months of supplies were lost.³⁷ Furthermore, this demonstration of airpower forced Japan to rethink how it would accomplish all future resupply of its ground forces; this was a fundamental and decisive shift, termed “a fatal blow to the [Japanese] South Pacific operations” by the commander of the Japanese 8th Fleet at Rabaul.³⁸ In the push for independent strategic forces, airpower advocates have often misinterpreted the success of this battle. As Richard Muller explains, “Air power advocates frequently cite Bismarck Sea as an example of air power winning an independent victory over surface forces. A broad view of the campaign reveals that the success was only a part of an impressive combined arms victory, won by a *balanced* force.”³⁹ Kenney’s forces were successful at the Bismarck Sea, as well as in destroying the Japanese air forces, capturing of airfields, interdicting supplies, and generally aiding the combined U.S. advance toward the Japanese homelands, precisely because of his balanced force.

“Kenney’s actions in the war were partly the result of his prewar thinking about air warfare and partly the result of adapting to the particular environment. Kenney was a fervent believer in air power, but he was not enamored of one type of aircraft or one particular use of air power. The challenge for the theater air commander, he believed, was building an air organization that made the most out of the capabilities of

³⁷ Griffith, *MacArthur's Airman : General George C. Kenney and the War in the Southwest Pacific*, 101-12.

³⁸ *Ibid.*, 111.

³⁹ Richard R Muller, "The Air War in the Pacific, 1941-1945," in *A History of Air Warfare*, ed. John Andreas Olsen (Washington, D.C.: Potomac Books, 2010), 68.

airpower in modern warfare.”⁴⁰ By being the responsive JFACC under MacArthur, he had a strong impact on the campaign as a whole.

Through face to face meetings and strong relationships with the ground commanders, his forces were considered the supported command at those times when it was necessary to advance upon aerial ports nearer to the final objective. By working in close conjunction with the ground scheme of maneuver, airpower was able to make this happen at a much faster rate.

From Operations to Theory

Both Quesada and Kenney possessed what seemed to be a rare trait for Army Air Corps generals during World War II. They possessed a certain flexibility of thought that allowed them to bend and shape the capabilities of airpower to suit their tasked mission. In the face of their peers who were fighting for institutional independence, they were able to focus on the joint mission. Each was willing to be a strong complement to the ground commander, while maintaining centralized control of their air assets. Partly because the pre-war design of the air corps left tactical air ill-equipped, partly due to their own innovations, they both had to integrate previously untested tactics and technologies into their fighting. The USAF still uses many of these practices today.

However, their innovations went beyond simple pieces of machinery or communications gear. They both fundamentally changed the way their aircraft were used in the face of adversity. Their Airmen mastered the concept of balance through multi-role, multi-mission employment responsive to the joint scheme of maneuver. Neither Quesada nor Kenney advocated an independent ‘tactical’ force in the way that others were advocating an independent ‘strategic’ force; instead they understood and appreciated that where properly balanced, strategic bombardment could only further the joint campaign.

⁴⁰ Griffith, *Macarthur's Airman : General George C. Kenney and the War in the Southwest Pacific*, 247.

It is of little surprise that the senior Army leaders lauded both Quesada and Kenney. In his memoirs, Omar Bradley stated, “[Quesada] was an imaginative man unencumbered by the prejudices and theories of so many of his seniors on the employment of tactical air.”⁴¹ When asked to rank the top American generals of the European Campaign, Bradley placed Quesada fourth, behind Bedell Smith, Spaatz, and Hodges, but above the likes of Patton, Simpson, Eaker, Doolittle, and Vandenberg. Similarly, General MacArthur, in his recommendation for Kenney’s fourth star, stated, “I believe that no, repeat, no officer suggested for promotion to General has rendered more outstanding and brilliant service than Kenney... Nothing that Spaatz or any other air officer has accomplished in the war compares to what Kenney has contributed and none in my opinion is his equal in ability.”⁴²



⁴¹ Omar Nelson Bradley, *A Soldier's Story*, [1st ed. (New York: Holt, 1951), 337.

⁴² Griffith, *Macarthur's Airman : General George C. Kenney and the War in the Southwest Pacific*, 96.

Chapter 5

Reframing Combat Airpower

Definitions and Prerequisites for Strategic Balance in Today's Air Force

In my view, airpower is an immense entity in itself, but it is interlocked with sea and land power, and all three are interdependent.

Sir Arthur Tedder

Strategists educated by strategic theory have to be creative in deciding how best to employ airpower available to the distinctive context at issue.

Colin S. Gray

In 1946, Army Air Forces leaders set out to determine what the new Air Force structure would look like. While all were veterans of World War II, they had very different opinions on how this new independent service and its aircraft would be organized.

Some senior AAF officers objected to Spaatz's decision to split the Air Force into strategic and tactical forces. At an Air Board meeting in December 1946, General Kenney, the first SAC commander, said, "I think we are cutting ourselves into two camps that are liable to be gobbled up...I don't think that an airplane should be considered as a tactical airplane and a strategic airplane," Kenney argued, "I think it is an airplane." Major General Elwood P. Quesada, the first TAC commander, agreed in principle but thought that without the distinction, the Army might try to demand its own tactical air forces on the same grounds that the Navy had kept its carrier-based forces.¹

It is not very surprising that the two Air Force leaders whose war successes were based upon a rounded approach to airpower using all

¹ Warren A. Trest, *Air Force Roles and Missions : A History* (Washington, D. C.: Air Force History and Museums Program, 1998), 114.

types of aircraft performing all types of missions, would see the danger in typecasting aircraft and dividing up the newly formed Air Force.

However, the establishment of TAC and SAC was not merely a result of the overwhelming inertia of the strategic bombardment advocates. Many issues contributed to this force structure to include post-war downsizing, budget constraints, an updated world outlook, and the realized potential of nuclear weapons. The challenge facing the leaders of the newly formed United States Air Force was one that still exists today. How should we equip our force to meet the needs of any potential conflict while in a budget-constrained environment?

In the preceding chapters I have endeavored to outline a logic that highlights enduring truths about airpower and the need for balance. The purpose of this section is to frame the dominant aspects of airpower into modern-day terms, to determine the relationships between these functions of airpower, to recommend possible broad balanced approaches, and consider the effects of limited resources and long-term acquisition processes inherent in airplane production.

The Transition from Military Theory to Airpower Theory

From the beginning of our discourse on traditional military theory, it is clear that a predominance of one element of force can be met, avoided, or countered much more easily than when faced simultaneously by a multiple of varying capabilities at once. Historical examples of this abound at the operational level. In ancient Greece, it was only when the Spartan army and Athenian navy stepped away from their traditional roles that they were able to move past their stalemated conflict. Syracuse and its Spartan allies were able to decisively engage the Athenian navy, not just because they chose follow Gylippus' advice to build ships, but because they maintained balance with their army. In contrast, the Athenians chose to rest on their navy, to their peril: "The fate of the

Athenians being placed in their fleet, their fear for the event [a loss at sea] was like nothing they had ever felt.”²

Likewise, the impasse between the French Continental Army and the British Royal Navy during the Seven Years’ War saw a return to the status quo antebellum on the European continent, while the French lost significant colonies. This was because while the British were able to build enough land power to aid the Prussians, the French chose not build enough naval power to protect their interests abroad.³ If both these examples show the weakness of having the predominance of forces in one sole domain, why should we believe overwhelming airpower would be impervious to the effects of such an imbalance?

Both Clausewitz and Fuller saw such imbalances at all levels, from strategic to tactical. They both used three-sided models to demonstrate the interoperability of their aspects and the need for balance. For Clausewitz, speaking on the Grand Strategy level, he saw the nature of war being held in balance between three dominant tendencies that shape the kind of war a statesman and commander will fight.⁴ The true nature of war is suspended somewhere in balance between all three tendencies. What is important to this discussion is the fact that solely focusing on affecting one, such as breaking the will of the people through strategic bombing, will not address the full nature of war. Hence, applying all military means against just one aspect will not alone win a war. In order to help relate this concept to his military readers, Clausewitz uses the

² Thucydides, Strassler, and Crawley, *The Landmark Thucydides : A Comprehensive Guide to the Peloponnesian War*, 7.21, 7.71.

³ Richard Middleton, *The Bells of Victory : The Pitt-Newcastle Ministry and the Conduct of the Seven Years' War, 1757-1762* (Cambridge: Cambridge University Press, 1985), 216. Also, Russell Frank Weigley, *The Age of Battles : The Quest for Decisive Warfare from Breitenfeld to Waterloo* (London: Pimlico, 1993), 219-31.

⁴ Michael I. Handel, *Masters of War : Classical Strategic Thought*, 3rd rev. and expanded ed. (London ; Portland, OR: F. Cass, 2001), 104-07. Handel gives an excellent discussion of Clausewitz’ concepts, going so far as to graph these ideas into triangles and vector analysis. He then asserts that if you weigh the relative efforts of each you can determine the nature of war from conventional to guerilla war.

example of balance between the infantry, cavalry, and artillery in an army, but warns against determining a fixed ratio or arbitrary relationship between these elements.

Fuller also used the example of infantry, cavalry, and artillery to illuminate his own triads. However, he went a step further and attempted to match these forces to purpose. As he distilled his argument, Fuller determined that there needed to be a balance between offensive power, protective power, and mobility. He took these terms and elevated them to metaphysical ones relating them to the mental, morale, and physical spheres of war. As he pointed out, it is directly the imbalance of these spheres that leads to war.

The lessons learned from these three-sided conceptual models are two-fold. The first discusses balance of forces, be they an army, navy, and air force, or specific elements of a combat branch, such as bombers, fighters, and attack aircraft. This balance should not be fixed, nor will any planned ratio meet every possible scenario. However, it should be flexible and adaptive enough to meet a wide range of possible conditions. The second lesson learned is implicit; the enemy may have an exploitable imbalance of their own. As Alcibiades told the Syracusans, “the surest method of harming an enemy being to find out what he most fears, and to choose this means of attacking him, since everyone naturally knows best his own weak points and fears accordingly.”⁵ This is strong advice, as long as one understands and tries to protect their own weak points as well.

The initial airpower theorists struggled with the challenge presented by these two lessons on balance. Perhaps the commonly accepted label of ‘prophets of airpower’ is a bit of a misnomer when talking about Douhet, Mitchell, and Trenchard. While the realm of air was certainly something new, an observant scholar would see that it had

⁵ Thucydides, Strassler, and Crawley, *The Landmark Thucydides : A Comprehensive Guide to the Peloponnesian War*, 6.91.6.

changed the context of war but not the nature. Prophecy was not required. The existing knowledge on war merely needed translation into the language of airpower.

This is not to disparage the work of those first, passionate advocates of airpower. Without their efforts, the many benefits and capabilities of aerial action may not have been realized in the manner that they were. All three of the men mentioned here brought the dialogue on airpower to the forefront when others were firmly entrenched in the prior forms of combat. Billy Mitchell rightly deserves his title as the 'Father of American Airpower'; airpower needed to have an experienced advocate. Anyone who reads Mitchell's works will immediately realize that military use and specifically strategic bombardment was but one of many aspects of airpower Mitchell endorsed.

The Balance of Airpower

The challenge was (and could easily be argued, still is) where to balance airpower with the other realms of combat. Airpower became the third side of a new triad of combat power, despite often begrudging acceptance of some in the navies and armies of the world. Possession of overwhelming airpower on one side, or a serious lack thereof on the other, had the potential to be the greatest strength or weakness of a given military force. Airpower then, represented not only an external threat to one's enemies, but also an internal threat to one's military status quo. It was on these division lines that the debate was formed. As time went on, the conceptual strengths of airpower became more polarized, and distilled toward strategic bombardment via an independent force. There are multiple reasons for this, yet the argument seemed to revolve around three key considerations: control, budget, and effect.

While most of this thesis has discussed the level of effect of airpower, and its ability to affect an enemy through overwhelming force

upon one tendency of war, the issue of control exists throughout every example I have presented. Much of the discussion demonstrating balance of airpower through theory or action was based on a tacit promise by air to the other domains that air would take a supporting role when the situation demanded it. This required acknowledgment that air was, in fact, as relevant as the other domains. This acknowledgement did not come so readily, and forced many airpower advocates to focus on independent action as the only way to prove the peer capabilities of an air force.

However, for all its might and capabilities, airpower was still a relatively new combat form. Many of the initial theories on strategic bombardment were plagued by failure to fully understand the environment, and a belief that the nature of war had changed. Additionally, the divide between strategy and the limits of technology were also quite detrimental. The concept of strategic bombardment relied on the hope of advancing technology to improve payload, accuracy, and range, but was specifically ignorant of the fact that technology might enable the development of forces able to counter independent bombing action. The detrimental effects of future technology are only magnified when such advances are not considered against forces with their own advances in technology.⁶

Finally, technology goes hand in hand with budget considerations. How much should a country invest in an unproven and extremely expensive instrument of military power? When making the case for an air-minded society and future air dominated force, budgeting played a key role. The arguments by the prophets for airpower's capabilities were

⁶ For example, with stealth and precision guided munitions, the U.S. Air Force has the technology to accomplish all Douhet had promised without the fallout of collateral damage or attrition. However such action alone may not be enough to win a war. See Silvanus T. III Gilbert, Lt.Col, "What Will Douhet Think of Next? An Analysis of the Impact of Stealth Technology on the Evolution of Strategic Bombing Doctrine" (School of Advanced Airpower Studies, 1992).

very often based on cost-effectiveness. This was a particularly alluring argument, but demanded much more than airpower could reasonably provide. As previously stated, there appeared to be a promise that airpower could be used to do everything of consequence; when airpower turned out to not be the panacea promised, its effectiveness was challenged by its critics. In effect, the overstatement of airpower did not justify its budget, and the mislabeled revolutionary nature of airpower overstated its role and capability. This was not deliberate, but a result of the exploration of a new domain and its yet to be proven potential.

In his forthcoming book on airpower, Colin Gray expands on this phenomenon: “Of course airpower occasionally was mishandled strategically, operationally, and tactically... Every military instrument always is commanded, and performs, somewhat short of what expectations of perfection specify. However, the relevant standard for sensible historical strategic judgment is not perfection; rather it is suitability and task adequacy.”⁷ When attempting to balance airpower alongside ground and naval power, these factors certainly must be considered, but they are equally important when balancing the aspects of airpower themselves.

The examples given in chapters four and five are not meant to represent or be dismissive of the capabilities of strategic bombardment as a whole. Most aspects and ideas of strategic bombardment had immense value to a war-fighting scheme of maneuver, when properly balanced with other aspects of airpower. There are multiple examples in which airpower focused solely on pursuit or close ground action created imbalances in their own right. However, there are two concepts that appear through these chapters. The first is that the traditional terms that define the aspects of combat airpower could benefit from an update. Second, the strategy of independent air action was a means to the larger

⁷ Colin S. Gray, *Airpower (Unpublished)* (Maxwell AFB, AL: Air Force Research Institute, Air University, 2011), 417.

end of the USAF garnering independence and relevance. The legitimacy of an independent USAF has been reinforced for the past sixty years and is no longer subject of serious debate. There now needs to be a stronger focus on an interdependent Air Force; one that can be decisive through independent action, but also can subordinate to the other forms of surface-based power as they capitalize on the conditions airpower shapes and creates.

On Strategic and Tactical Airpower

The main limitation on how airpower is perceived derives from self-imposed definitions of strategic and tactical airpower. For the most part, these have been based on factors of range and effect. Early on, the prophets of airpower realized that performance capabilities gave aircraft amazing speed and range. Strategy is concerned with the linkage of actions and effects; the grander the strategy, the more far reaching its effects, and longer its influences. Since airpower at its simplest is 'affecting something in or from the air' and it could do so at previously untenable speeds and distances, it is no surprise that airpower was considered strategic from its onset. The real promise of airpower seemed to be that it could compress time and space across the battlefield to quickly achieve a military's aims before the enemy could react. However, strategic bombing did not always achieve its desired effect in a quick and obvious manner. Resiliency, limitations on targeting, and unexpected vulnerabilities of strategic airpower often minimized the intended strategic effect.

Tactical airpower also suffered from a mismatch of terminology to usage. It was typically seen as that which had less range or effect than strategic airpower. Usually in the form of a subordinate instrument to ground forces, tactical airpower capabilities were not seen as being far-reaching or beneficial to the total strategic goals. This caused airpower zealots to label tactical air forces as superfluous and unnecessary, and resulted in militaries reducing the requirement for fighter and attack

aircraft during the interwar period. The question was never raised on whether the ‘tactical’ aircraft could enable strategic aircraft, or if, when properly used, could aid ground forces to have strategic effects of their own. As the examples I have presented show, these instances can and do happen, and have strategic effects on the battlefield.

I have called this the paradox of airpower, but it is a direct result of imbalanced forces and imprecise definitions. In his book *The Limits of Airpower*, Mark Clodfelter adopts a framework for airpower, dividing it into direct or indirect by purpose of mission, and auxiliary or independent based on whether the objectives are tied to ground or sea forces, or whether they are geographically separated. His framework highlights the fact that the terms strategic and tactical are often blurred and overlapping. By using the concepts auxiliary and independent, his framework focuses “on the intent of the mission highlight[ing] airpower’s inherent flexibility by showing that one type of aircraft—whether designated bomber, fighter, airlift, and so forth—can participate in different applications.”⁸ This is a deliberate side-step from the labeling of airpower as strategic or tactical. Again, he explains: “Only one true criterion exists for evaluating the success of airpower, regardless of whether it was direct, indirect, auxiliary, or independent. That criterion is the ultimate bottom line: how well did the application contribute to achieving the desired political objective?”⁹ The answer to the paradox of strategic and tactical airpower is that all airpower is tactical in effects and strategic in its implications. The labeling of forces as strategic or tactical places unnecessary limits on the capabilities of forces.

In the examples given by the operators (Kenney and Quesada), we see that a more open approach to airplanes and missions certainly proves this true. The underlying concept is that airpower must not only be balanced in relation to ground and sea power, but it must be

⁸ Clodfelter, *The Limits of Air Power : The American Bombing of North Vietnam*, 213-14.

⁹ Ibid., 215.

interdependent with these in order to optimize strategic effect. To do this, the functions of airpower themselves must also be balanced and interdependent. When most of the early airpower theorists talked of airpower, they spoke primarily of independent function— strategic bombardment, or pursuit, or attack. Many of the mission-defining terms of the interwar period are still used today, and are very often stove-piped to specific airframes. Instead I suggest a three-sided conceptual model of combat airpower that focuses on each function's objective.

The Triad of Airpower

Fuller's conception of offensive power, protective power, and mobility serves as the basis of conception for this model of airpower. In order for combat airpower to be balanced it must be able to affect something in or from the air, but it must also be defended against enemy counterattack. Finally, it must be able to subordinate itself to another realm of power when airpower's tactical capabilities are limited in their strategic effect. I label these three functions Air Support, Air Offensive, and Air Service. These functions of airpower are all interdependent; fixed, arbitrary ratios of forces matched to them will severely limit the capabilities of airpower as a whole.

Air Support

Representing protective power, air support is the function that enables all other air action and guarantees freedom of maneuver. Air support is the function of combat airpower that should ensure command of the air. Most early theorists of airpower made an *a priori* assertion that command of the air was the most important role for airpower. However, determining what forces to use and how to achieve this status created cognitive disconnects as seen in the difference between the Douhetian mindset of bombing airfields and factories and Chennault's concept of defensive pursuit. Others like Slessor grappled over where exactly these missions should fit in amongst the other functions of

airpower, acknowledging that while air support is vitally important, it is not airpower's sole function.

In order to achieve balance and interdependence in airpower, air support must be understood as the essential function of airpower that enables all other functions. However, it does not advance any military strategic goals by itself. Perhaps one of the most precise statements to this effect comes from Everett Dolman in his book, *Pure Strategy*: "Command of the medium [air] is not an operational end in itself. It is the purpose of air strategy but not its *satisfying objective*."¹⁰ His statement is based on a concept that command of the air is the purpose of airpower, and that the other aspects of combat airpower are its functions.¹¹ Framed in this manner, air support enables the other functions of airpower (and land and sea power) to operate in an environment without influence from enemy airpower.

Air support should not merely consist of air-to-air fighters. Instead it should consist of various aircraft conducting a multitude of missions that can contribute to the freedom of action in the air. Modern day missions such as Offensive Counter Air (OCA), Defensive Counter Air (DCA), and Suppression of Enemy Air Defenses (SEAD) are all air support missions. Additionally, Electronic Warfare (EW), Command and Control (C2), and strike missions against enemy, airfields, radars, C2, and surface to air missile sites all should be considered air support missions. If the aperture is opened beyond combat missions, inflight refueling, and most lift functions meant to support an air force should be considered air support missions as well.¹²

¹⁰ Everett C. Dolman, *Pure Strategy : Power and Principle in the Space and Information Age*, Cass Series--Strategy and History (London ; New York: Frank Cass, 2005), 40.

¹¹ Ibid., 34.

¹² For the purpose of simplicity, I focus on combat airpower functions in this thesis. However the logic remains the same when evaluating almost all non-kinetic missions an air force provides to include space and cyber realms.

Air support is so vital to airpower as a whole that it is difficult to determine the correct amount of assets assigned to it. It is important to note that while other aspects can operate without air support, if there is potential for threat, they do so at the risk of great attrition. Conversely, even with full command of the air, air support alone achieves little that will directly or independently advance strategic goals.

Air Offensive

Air offensive is best used to exploit the advantage of command of the air, from the air. Represented in Fuller's model as the offensive power, this function of airpower is focused on effects from the air unto an enemy target or system. These effects can take a multitude of forms and be either indirect or direct in their ability to advance strategic goals. Air offensive is the function of airpower that is primarily independent of other realms of power, but highly interdependent on the other functions of airpower.

However, in order to be most effective air offensive must be balanced both internally and externally in relation to all combat airpower. Internally, air offensive is best employed when air support has established command of the air. This should not be a linear task; air superiority does not need to be all encompassing of the joint operating area before air offensive missions are launched. Air support forces should be used in a timely and localized manner, integrated with air offensive actions. External to the combat functions of airpower, air offensive missions should be supported by all other components. Support for air offensive can come in the forms of logistical trains, POL, airbase defense, and ground based C2 and intelligence, amongst others.

Furthermore, while most air to surface missions, such as Strategic Attack (SA), and Air Interdiction (AI) would fall under air offensive category, there are many more uses of airpower that should be considered as air offensive. Air-to-ground Information Operations (IO), EW, and any other non-kinetic effects not in direct support of surface

component actions, should be considered air offensive functions. Determining what missions to fly as a part of air offensive, what means or effects to achieve is often a challenge as well. As many of the historical examples point out, the tactic of strategic bombardment was not so much how to drop bombs, but how to protect those assets, what targets to effect, and how best to accomplish this. From the review of theory and practice given, two main lessons arise.

First, for air offensive to be most efficient, it requires strong air support. The combined bomber offensive in World War II began to have a serious impact when long-range escort fighters cleared the Luftwaffe from the skies and defended the bombers all the way to the targets. Bomber crews had to spend less time worrying about defense, which increased their accuracy. Additionally, their attrition rate decreased which increased morale and maintained combat airpower.

The second lesson is that the best weapon to affect a target is the one that immediately (or very rapidly) can be brought to bear against the enemy. Both Quesada and Kenney used aircraft in innovative ways in order to achieve air offensive effects rapidly. This need for speed is important tactically, but is also decisive to overall strategic impact. In order to maximize air offensive functions the effects must be exploited as soon as possible. This can occur by additional, advancing airpower, or by coordinated maneuver of ground and surface forces. Properly employed air offensive functions must have momentum, which should be used to further command of the air through air support, allow for deeper or more substantive air offensive missions, or transition to air service in subordination to the ground or surface scheme of maneuver.

Air Service

As the history of the past 100 years of air warfare has shown, there will be times when air support and air offensive will not be enough to independently achieve all strategic objectives. Very often, the situation may present itself where there is no option other than ground forces

controlling contested terrain, to reach desired end-state. However, there are many instances where airpower directly subordinated to ground or surface scheme of maneuver has had decisive tactical effects, and enabled strategic advances. Represented by mobility in Fuller's model, air service is the function of airpower that is applied in close coordination with the other realms of combat to directly enhance and assist their operations.

However, it must be clear that air service, just like air support and air offensive, is severely hampered in its effectiveness when it is the sole focus of airpower, or when it is used independent of these other functions. This was the fear of the prophets of airpower and the early proponents of independent strategic bombardment. They felt that air support missions could appear so viscerally effective to ground commanders, that there would be an attempt to convert all airpower assets into air service functions. This was a valid concern that still has relevance today. What our outliers and operators show, however, is that this function can and should be balanced. Again, certain lessons arise on how to be successful in doing so.

The air commander needs to fully understand the ground commander's scheme of maneuver, and then use his expertise to apply airpower intelligently in order to achieve maximum effect. This is a two-way street, though. The air commander must also be able to adequately explain the benefits of the other forms of airpower to a ground commander, even when they are indirect and seemingly independent. In most cases, air service is considered direct and auxiliary, to use Clodfelter's model. Nonetheless, by 'thinking wider with bigger maps' the concept of air service can be expanded beyond typical traditional roles.

In most cases today, combat airpower via air service tends to be in the form of Close Air Support (CAS), Intelligence-Surveillance-Reconnaissance (ISR), and the use of Special Operations Forces (SOF). However, many of the missions tied to air offensive and even air support

overlap with air service. Interdiction is the most obvious, but C2, EW, and IO missions all can be forms of air service if they are able to assist ground maneuver. Additionally, as ground armies become faster and leaner, much of the heavy attack capabilities can be shifted to air missions taking on a form of coordinated air attack.¹³ Air service is a critical function of airpower, but it must be neither ignored nor overstated; it must be in balance with the other airpower functions.

The Interoperability of Balanced Airpower

The three functions of air power I have laid out are both empowering of, and reliant upon, one another in the same vein of the other triads presented. However, their lines of distinction, roles, and relationships often blur. Clausewitz and Fuller made the case that an imbalance of one aspect of their triads would result in a stagnation of capability at best, and critical vulnerability at worst. The initial concepts of strategic bombardment proved this to be true. It should be understood that balance is required; however, what the examples from the operators show is that the requirements go beyond balance. The functions need to be flexible and interoperable in order to achieve maximum effect.

For example, let us suppose the USAF has a goal of ensuring an enemy's air force isn't able to use its airplanes against US forces on a certain day in the future. What is the best way to make this happen? Using today's airframes and technology, I present the following possible options (certainly this list is not exhaustive):

- 1.) Wait until the enemy air force is airborne and shoot them down using our own aircraft.
- 2.) Attack the enemy facilities (runways, hangars, control towers, barracks) with aircraft so they do not have the facilities to launch.

¹³ Bruce Pirnie, United States. Air Force., and Project Air Force (U.S.), *Beyond Close Air Support : Forging a New Air-Ground Partnership* (Santa Monica, CA: Rand, 2005), 7-30. An excellent discussion on how to use airpower, via the function of air service, in ways that best advance air and ground schemes of maneuver alike.

- 3.) Bomb the enemy ammo dumps, or POL facilities, or aircraft factories such that they do not have the equipment to launch.
- 4.) Jam the enemy command and control facilities so that their air force cannot effectively employ once in the air.
- 5.) Conduct an IO campaign that convinces the enemy not to fly (or makes them bury their aircraft in the ground).
- 6.) Use a transport aircraft to bring in special forces to seize critical airfield functions to deny them the ability to fly their aircraft.

All of these options are very possible with today's USAF; some are air support, some are air offensive, and some are air service functions. All are able to affect the enemy in the desired way, from the air, but achieve their effects using very different aircraft. The effects may be realized over varying lengths of time and impact, depending on the choice made. Using this simple example as a guide for the versatility of airpower, how best does the USAF balance its force structure?

Flexibility is Required to Maintain Balance

While there is no right answer any more than there is any arbitrarily perfect balance of forces, the most correct answer lies in maintaining those forces that could have the greatest impact. The cognitive disconnect often appears when trying to define this impact. Historically, we have seen impact in combat airpower focus on being the superlative vehicle for one specific mission of airpower versus the total war effort. Because the functions of airpower are often stove-piped in their command structure, test and development of new airframes often go down very specific paths to make these airframes able only to perform one mission, but perform it exceedingly well. The USAF has done this for such a long period of time with our combat platforms focused on major combat operations, that it has dominance in the air support and air offensive roles, but with little capability to shift those platforms to providing air service in the same manner. It appears that the current answer to this problem is to procure all new combat airframes that solely perform the air service function.

If instead, we look for the greatest impact, as those forces that are able to be reasonably effective perform the largest number of missions, across multiple functions of airpower, we may see that our current force structure is mismatched and over cost to meet mission requirements. The examples of Kenney and Quesada, show that the most valuable 'workhorses' are those combat platforms that can perform a variety of missions across all three functions of combat airpower. Impact should not be in the form of superlative capability in one function of airpower, but in the maximum flexibility to perform missions across all functions of airpower, anywhere in the spectrum of conflict. Colin Gray tackles the reasoning for this, averring: "Whereas policy and strategy can be shifted rapidly, the tactical competence of an armed force cannot. It takes time to generate the fighting power needed from troops suitably equipped, doctrinally well prepared, appropriately trained, and sufficient in numbers to do the jobs that policy, strategy, and operational art require."¹⁴

A balanced combat air force of the future is one that creates a structure of platforms that are interdependent among one another, able to create multiplicative effects within the joint area of operations, in and from the air domain. The USAF must avoid designing an overabundance of platforms that can only be effective in fulfilling one function of airpower. Kenney and Quesada were able to overcome this challenge through innovation with the platforms they had, while in the field. Given today's long research and development time lines, burdensome procurement process, and a complex technological environment, such rapid innovation may not be as readily feasible. The future promise of airpower should not be that airpower alone can do everything of consequence, but that it can and will be able to reasonably advance strategic ends through tactical effects across the entire spectrum of

¹⁴ Gray, *Airpower (Unpublished)*, 429.

conflict. Its combat forces should be balanced and interoperable in order to provide the joint commander with the ability to advance his combined scheme of maneuver rapidly through both independent and interdependent action.



CONCLUSION

Implications for Future Balancing of Airpower

Although airpower certainly has transcended the bounds of terrestrial Earth, it has not transcended the authority of the contexts of war and strategy that give it meaning.

Colin Gray

We cannot afford to become over equipped with specialized aircraft designed for the particular geographic and military conditions... Such conditions could change. We must retain our versatility and flexibility for other contingencies. Aircraft are expensive to build and to operate and it would be wasteful to have a special aircraft for every specialized job. Wars of any kind cannot be won without air power and without exploiting its almost limitless potentials to the fullest. Hence we must have highly versatile craft.

Curtis LeMay

Airpower is Unique, but not Exceptional

This examination of theory, terminology, and application of airpower has continued to highlight the distinctive character of the air domain. However, it has shown that airpower is not so unique that it required a fundamental change of thought on how to fight wars. "Today and most probably for many years to come, airpower is and will remain a massive potential source of *potentially* asymmetrical advantage to the United States and its close allies. It follows necessarily that just as America's rivals and enemies are motivated to design and effect ideas and capabilities to negate that US advantage, so America should be motivated to make of its airpower... all that it can be strategically."¹ We must see airpower as playing a role, albeit a very important one, in the larger context of the total ability to wage war.

¹ Ibid., 519.

Airpower is unique, but it is not exclusive of, or immune to, the basic tenets that guide all warfare. It must be balanced among the other domains. At times airpower may play the dominant role in combat, but at other times it must be responsive to and supporting of action on the ground, sea, space, or cyberspace. As such, combat airpower must also be internally balanced to meet the wide variety of potential strategic demands placed upon it.

In *Why Air Forces Fail: The Anatomy of Defeat*, the authors assert: “The philosophical essence of Douhet, Trenchard, Mitchell [was] so powerful that nations that could not afford to build a bomber force nevertheless became entranced by it, often at the expense of other elements of what we would now call air warfare.”² The allure of a bomber force was built upon a particular set of conditions: total war between discrete countries. The theory that the bomber was an unstoppable force with no effective counter should have only been a temporary one, as air forces identified the need for air superiority, air defense, and fighter escort. The real irony, however, laid in the discovery that mobility through flight compressed time, space, and cost across the battlespace, and made all sorts of warfare possible. Bombers alone could not meet all the requirements of airpower across the entire spectrum of conflict.

The enigma of airpower faded as smart Airmen figured out innovative ways to take advantage of the air domain. Airpower has had the greatest effect when it was viewed not as exclusionary and independent, but when it is inclusive and interdependent. Short of total annihilation, the best air offensive campaign is for naught, if there isn’t another function of airpower, domain of war, or political means to exploit its accomplishments. The same can be said of the best air superiority campaign or air service integration effort.

² Robin D. S. Higham and Stephen John Harris, *Why Air Forces Fail : The Anatomy of Defeat* (Lexington, Ky.: University Press of Kentucky, 2006), 342.

A Reframing of Concepts

Airpower is not alone in having to resolve the issue between strategic and tactical in discussions of its forces, their capabilities, and their effects. The distinctions and deliberations over these terms have occurred with armies and navies in the past, and are destined to occur within space and cyber forces. For the past eighty years, the direct correlation of these terms for airpower has been tied to range and level of impact. However, the underlying truth that must be acknowledged is that no function of airpower is inherently strategic or tactical. Instead it is the timeliness of its action, and the way it affects the enemy, or the strategic environment as a whole, that determine its context.

An example of this is the recent concept of the “Strategic Corporal”, which avers that the actions of just one soldier can have strategic implications across the battlefield and beyond. The Army and the Marines are actively trying to instill this concept, and the responsibilities therein, to their troops at the lowest level. However, nothing has specifically changed in the nature of warfare. The only real change is in the depth and breadth of information about that soldier’s actions to the rest of the world. The strategic effect comes from reduction of time to transmit information, and an increase in the number of people it can affect thanks to our rapidly developing global information structure.

This was the challenge presented to airpower at its inception. Airpower’s struggle to resolve this challenge should serve as a guide to similar situations in the future. When viewing airpower through this lens, it is obvious that the labeling of forces “strategic” and “tactical” unnecessarily boxed in its capabilities and effects. When removing these labels and evaluating the functions of combat airpower, the need for balance and interoperability becomes clear.

The power of the bomber was never questioned; the capability to impart devastating kinetic effects upon the enemy was always viewed as advancing strategic interests. However, without air superiority to enable

the air offensive capabilities, and without ground maneuver exploiting these air offensive efforts, much of the potential of air offensive can be squandered in its attempt to achieve strategic advantage.

In the same vein, the need for air superiority has never been questioned. The questions on air support predominantly focus on how to achieve it, and what to do once it is attained. Yet in recent years, a more pernicious question has arisen. Since no enemies have even attempted to challenge our air support forces in recent conflicts, air superiority is often assumed, and the need for forces to ensure it questioned. Hence, the U.S. has cut the budget for the air support assets required to ensure the other functions of combat airpower can operate with relative freedom of action. Determining the appropriate level of forces for this very necessary function of airpower will continue to be a challenge for the USAF.

Finally, air service in support of the ground maneuver has often been snubbed in favor of independent action. The basis for this appears to revolve around a dated belief that by supporting the army in certain conflicts and phases, the Air Force will lose its relevance, independence, or justification for existence. Warfighters must understand that when combat airpower transitions most of its focus to air service, it is only because air support has ensured freedom of action in the air domain, and air offensive has decisively shaped the battlefield. Air service can and should be the key enabler to allow ground or sea forces to achieve their strategic ends. A war should not be won solely by boots on the ground any more than it can be won by airpower alone.

The crucible of air combat in World War Two created the environment to meld, merge, and integrate these functions of combat airpower for maximum effect. "When the war ended, the outstanding lesson of the air conflict was clear. Warfare had muddled the distinctions between tactical and strategic air power. They may have had separate identities in peace time, but the pressure of war inexorably

molded them, as it does all forces, into a single weapon.”³ Unfortunately the perceived potential of nuclear weapons again split airpower along strategic and tactical lines and it would not be remolded again into a single weapon until the wars in Iraq and Afghanistan in the 1990s and 2000s.

Irregular Warfare and Imbalance

In *Why Air Forces Fail*, a volume of case studies on defeated air forces, the overarching conclusion is that failure in airpower is a result of systemic breakdowns of the force being unprepared or improperly equipped by quality or quantity of aircraft. Its main lesson is “that the ends must be matched to the means in the short term, and when national survival is at stake. Conversely, the means must be matched to the ends in the long term, when there is time to think and plan.”⁴ In other words, do what you can with what you have in the short term, but properly position yourself to have what you need to accomplish your long-term goals for the future. This sounds simple enough, but when attempting to balance forces, the disparity of the demands between the present and the future requirements may be so great that it can force an imbalance of airpower function.

Just as the USAF had reached a successful balance between air offensive and air support, the context of warfare the U.S. faced shifted to a low-intensity, long duration conflict focused primarily on face-to-face interactions in the ground domain. Combat airpower found itself unbalanced, as all the capabilities of air offensive and air support had a reduced impact upon transnational terrorists and insurgencies. In the past decade, the USAF has significantly ramped up its air service capabilities. However, there is no greater potential for future imbalance

³ Hughes, *Over Lord : General Pete Quesada and the Triumph of Tactical Air Power in World War II*, 16.

⁴ Higham and Harris, *Why Air Forces Fail : The Anatomy of Defeat*, 349, 52.

in the USAF than in the restructuring of our air forces to meet Irregular Warfare (IW) needs.

The USAF must approach using the term “irregular warfare airpower” with caution. Though surely an excellent topic for further research, labeling air support “irregular warfare airpower” could be just as detrimental as labeling air offensive “strategic airpower” or air support “tactical airpower.” By calling a part of airpower irregular, the USAF are making a tacit admission that it may not fully understand the context of this type warfare and how best to apply all functions of airpower against it, because it does not fit the current conceptions of airpower. This labeling could further restrict the full capabilities of air support, as it focuses primarily in servicing the ground domain in lower intensity combat against non-traditional forces.

However, if smartly used for a short period of time to educate and shift the traditional functions of airpower to incorporate its aspects, the terminology could be used to help guide a more balanced force structure for the future, as IW forces transition into an integrated, well-understood aspect of airpower. A consideration of the examples and conclusions of this thesis suggests that a balanced, interdependent force that integrates IW forces would best fulfill this current mission for air service, and combat airpower as a whole. By keeping balance in mind, and increasing our understanding of the strategic benefits of air service in lower intensity applications of combat airpower, the concept of IW airpower could dissolve in the manner similar to the blurring of strategic and tactical airpower did at the end of World War Two.

Balance, Budget, and the Future

General Lemay’s quote at the beginning of this chapter is particularly relevant when trying to determine how best to equip the USAF to achieve balance. He warned that conditions will change, and that it would be wasteful to have a special aircraft for every specialized

job.⁵ Perhaps this is a bit ironic coming from someone generally perceived to have been focused solely on equipping the USAF with nuclear bombers; however, the logic is sound. The lessons provided herein point to a force structure that goes beyond a simple balancing of airframes between the combat functions. Future air force airframes must be balanced in their abilities to accomplish multiple combat functions.

The United States Army is currently undergoing significant training of their ground forces to ensure that all soldiers, not just special operations forces, are able to conduct Counter Insurgency Operations (COIN).⁶ The new expectation of the soldier appears to be the ability to switch effortlessly from fighting man to stability operations enabler to nation builder. A similar type of shift of mission function is also required for successful combat air forces.

From the theory and evidence provided in this thesis, there appears to be a strong correlation between the abilities of multi-role, multi-mission aircraft and the potential for these aircraft to provide balanced effects. Successful air campaigns have occurred not only when air offensive, air support, and air service are balanced in a manner that best meets the joint force commander's needs, but when the aircraft used can flexibly shift between the functions in a timely and effective manner. Both Quesada and Kenney were highly effective due to their innovations, but the root of those innovations was the realization that airframes could go beyond their unitary, specialized roles.

The use of airpower over the course of the past ten years is yet another example of this fact. The USAF's preeminent fighters (F-15/F-22) and bomber (B-2) have been the least used combat platforms in their

⁵ Curtis E. LeMay and Dale O. Smith, *America Is in Danger* (New York,: Funk & Wagnalls, 1968), 235-36.

⁶ 177th Armored Brigade, "Not Just for Special Forces Anymore," [www.army.mil](http://www.army.mil/-news/2011/05/11/56285-not-just-for-special-forces-anymore/index.html?ref=home-headline-title7), <http://www.army.mil/-news/2011/05/11/56285-not-just-for-special-forces-anymore/index.html?ref=home-headline-title7>.

respective combat functions during this time. This is not to belittle the overwhelming capabilities of air support and air service these platforms bring to the fight. However, as we see F-22s equipped with Joint Direct Attack Munitions (JDAM) and B-2s training to perform CAS, this must be viewed as an acknowledgement of the limitations of a single specialty aircraft and the strong desire to fulfill multiple missions even with our most technologically superior, singularly focused airframes.

The current 'workhorses' of combat airpower, planes such as the F-15E, the F-16, the B-1, and the A-10 are all performing missions outside of what they were originally intended to do in order to fulfill all the functions of airpower. The A-10, now equipped with GPS, is dropping guided munitions from far above the ground. The B-1, now equipped with the Sniper targeting pod, is providing persistent, precision CAS over very long sortie durations. Both the F-16 and F-15E are regularly performing air to ground strafing and providing non-traditional ISR when kinetic effects are not required.

However, there is a cost to using such high performance aircraft in these air service roles. It is easy to see why the USAF is pursuing new avenues for achieving air service in a cost effective manner. However, care should be taken to ensure that shifting too much effort into aircraft solely able to perform this combat function does not create an imbalance. Ultimately, the USAF approach to the Light Attack Armed Reconnaissance (LAAR) aircraft might be the best opportunity to show proper balance in the near future.⁷ By focusing on minimal purchase of assets for the U.S., and instead building partnership capacity with peers and friendly, developing, foreign air forces, the USAF is able to prevent

⁷ Graham; Sweetman Warwick, Bill, "U.S. Wants Coin Aircraft for Foreign Training," McGraw-Hill, http://www.aviationweek.com/aw/generic/story_channel.jsp?channel=defense&id=news/dti/2011/04/01/DT_04_01_2011_p38-297236.xml&headline=U.S.%20Wants%20COIN%20Aircraft%20For%20Foreign%20Training&next=0.

an internal imbalance of forces, yet mitigate the need to directly support these partnering countries with our own aircraft. Much like the low-observable (LO) assets, perhaps the best starting point for balance is a small number of highly effective IW aircraft solely focused on air service, and then augmentation with a much larger number of multi-role aircraft able to reasonably perform the air service function.

Additionally, numbers of airframes and mission designations should not be the only considerations for future balance. Combat experiences drove Quesada and Kenney to understand that labeling an aircraft strategic or tactical was imprecise and unnecessary. The newly formed USAF still maintained this labeling, despite Kenney and Quesada's informed advice, and it wasn't until the formation of Air Combat Command (ACC) that the unnecessary split was resolved. In recent years, there has been somewhat of a retrenchment in terminology. An area for future study should be the demarcation of responsibility and missions for the combat forces within Air Combat Command, Global Strike Command, and Air Force Special Operations Command. Are these commands administratively delineated for peacetime posture, only to be merged and appropriately balanced by the needs of the combatant commanders, or do they create unnecessary division lines between combat airframes and mission sets?

Final Thoughts

The classical military theories presented by Clausewitz and Fuller have withstood the test of time, and are very applicable to airpower. The original prophets of airpower made a strong case for the potential of airpower to devastatingly affect an enemy, but failed to update their theories when other functions of airpower exposed the weaknesses of independent strategic bombardment efforts. Fortunately, there were other outlying airpower theorists whose own experiences showed the potential capabilities of defensive pursuit and air power coordinated with ground maneuver. Not all Airmen have been the best theorists, but

certain operators, leaders who could merge all the capabilities of airpower at their disposal and innovate with their aircraft to best meet the needs of the joint force commander, have demonstrated the full capability of balanced combat airpower.

There may be a final overarching conclusion to the study of balance. If balance is essential to combat airpower there is a double requirement for balance in armed forces. First, a military, and by extension an air force, should balance its efforts against those it affects, be it the enemy's fielded forces, its government, or its people. Second, a combat air force should strive to have a balanced capability to bring effects against a wide possibility of targets. In this thesis, comparisons have been used between terms such as strategic and tactical, missions such as CAS, Interdiction, and Bombing, or even my proposed functions of air offensive, air support, and air service, in order to aid in framing the elements that need to be held in balance. There is no correct ratio for these that will definitively cover all situations. What is known, however, is that overwhelming capability in one function cannot guarantee that strategic ends will be met in all instances. To the contrary, a predominance of effort and equipment in one function will inevitably allow an adversary to exploit weaknesses in the other functions.

The concept of a balanced triad presented here is a mental construction to help envision a strong, flexible strategy for combat airpower. A suggestion for further research would be to incorporate the necessary aspects of air mobility and communications, to evaluate balance of air assets beyond combat airpower functions. In theory, this concept of balance could even be 17-variable model incorporating all the key operational functions of air and space power outlined in Air Force Doctrine Document 1 (AFDD 1).⁸ The challenge is to accurately and responsively conceptualize the relative weights of effort of each of these

⁸ United States. Dept. of the Air Force., "Air Force Basic Doctrine," in *AFDD 1* (Washington: United States Air Force, 2003), 39.

functions and what the necessary balance required would be for a given conflict.

Balance in airpower has often been neglected as a result of a relative abundance of resources, yet the ever increasing cost of advanced technology will require balancing shortfalls in the future. The main problem in determining what this balance should be stems from potential versus realized capabilities that often blur the relationship between cost and strategic effect. The absence of F-22s or B-2s from the current fight does not mean their strategic effects are diminished. Likewise, simply because the air force is the supporting domain in the current conflicts does not mean it will be relegated to that role in all future conflicts if it attempts to adjust its current balance to better meet the ground commander's needs. As Colin Gray states, "because of the political variety of wars and conflicts, there has been and will be no conclusive tactical-technical resolution to the strategic question of where airpower is more the supporting than the supported military instrument... [However] airpower is strategically essential. The argument for airpower's strategic value has long passed its culminating point of victory. The time has come to realize that the airpower interest for national and international security has won."⁹ Solidifying this concept requires breaking out of stovepipes and traditional roles, and an acknowledgment that some of the initial theories that garnered the USAF institutional independence may not have been correct, or were at best limited in time and place. Instead, airpower must be understood to be at its finest when balanced within its own combat functions, and interdependent amongst its sister domains.

⁹ Gray, *Airpower (Unpublished)*, 530-31.

Bibliography

- Angelella, Salvatore A., Maj. "A Prototype Jfacc: General George Kenney." School of Advanced Airpower Studies, 1994.
- Bradley, Omar Nelson. *A Soldier's Story*. [1st ed. New York: Holt, 1951.
- Brigade, 177th Armored. "Not Just for Special Forces Anymore." www.army.mil, <http://www.army.mil/-news/2011/05/11/56285-not-just-for-special-forces-anymore/index.html?ref=home-headline-title7>.
- Budiansky, Stephen. *Air Power : The Men, Machines, and Ideas That Revolutionized War, from Kitty Hawk to Gulf War II*. New York, N.Y.: Viking, 2004.
- Builder, Carl H. *The Icarus Syndrome : The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force*. New Brunswick, N.J., U.S.A.: Transaction Publishers, 1994.
- Chennault, Claire Lee. *Claire Lee Chennault Papers, 1941-1954*.
- Chennault, Claire Lee. *The Role of Defensive Pursuit*. n.p., 1935.
- Chennault, Claire Lee, and Robert B. Hotz. *Way of a Fighter; the Memoirs of Claire Lee Chennault*. New York,: G.P. Putnam's Sons, 1949.
- Clausewitz, Carl von, Michael Eliot Howard, Peter Paret, and Beatrice Heuser. *On War*, Oxford World's Classics. New York: Oxford University Press, 2006.
- Clodfelter, Mark. *The Limits of Air Power : The American Bombing of North Vietnam*. Lincoln: University of Nebraska Press, 2006.
- Corum, James S. *The Luftwaffe : Creating the Operational Air War, 1918-1940*, Modern War Studies. Lawrence: University Press of Kansas, 1997.
- Crane, Conrad C. *American Airpower Strategy in Korea, 1950-1953*, Modern War Studies. Lawrence, KS: University Press of Kansas, 2000.
- Division, Military Analysis. "Air Campaigns of the Pacific War." In *The United States Strategic Bombing Survey*, v, 75 p. Washington,, 1947.
- Dolman, Everett C. *Pure Strategy : Power and Principle in the Space and Information Age*, Cass Series--Strategy and History. London ; New York: Frank Cass, 2005.
- Douhet, Giulio, Joseph P. Harahan, Richard H. Kohn, and Dino Ferrari. *The Command of the Air*, Fire Ant Books. Tuscaloosa, AL: University of Alabama Press, 1998.
- Dunlap, Charles J., Major General. "America's Asymmetric Advantage." *Armed Force Journal*, <http://www.armedforcesjournal.com/2006/09/2009013>.
- Faber, Lt Col. Peter R. "Interwar Us Army Aviation and the Air Corps Tactical School: Incubators of American Airpower." In *The Paths of Heaven : The Evolution of Airpower Theory*, edited by Phillip S. Meilinger and School of Advanced Airpower Studies (U.S.), xxx, 650 p. Maxwell AFB, Ala.: Air University Press, 1997.
- Farley, Robert. "Abolish the Air Force." *The American Prospect*, http://prospect.org/cs/articles?article=abolish_the_air_force.
- Force., United States. Dept. of the Air. "Air Force Basic Doctrine." In *AFDD 1*, 116. Washington: United States Air Force, 2003.
- Fuller, J. F. C. *The Foundations of the Science of War*. London: Hutchinson & Co., 1926.
- Gilbert, Silvanus T. III, Lt.Col. "What Will Douhet Think of Next? An Analysis of the Impact of Stealth Technology on the Evolution of Strategic Bombing Doctrine." School of Advanced Airpower Studies, 1992.
- Grant, Rebecca. "Quesada the Conqueror." *Air Force Magazine*, April 2003.
- Gray, Colin S. *Airpower (Unpublished)*. Maxwell AFB, AL: Air Force Research Institute, Air University, 2011.
- Gray, Colin S. *Explorations in Strategy*, Contributions in Military Studies,. Westport, Conn.: Greenwood Press, 1996.
- Gray, Colin S. *Modern Strategy*. New York: Oxford University Press, 1999.
- Griffith, Thomas E. *Macarthur's Airman : General George C. Kenney and the War in the Southwest Pacific*, Modern War Studies. Lawrence, Kan.: University Press of Kansas, 1998.

Handel, Michael I. *Masters of War : Classical Strategic Thought*. 3rd rev. and expanded ed. London ; Portland, OR: F. Cass, 2001.

Higham, Robin D. S., and Stephen John Harris. *Why Air Forces Fail : The Anatomy of Defeat*. Lexington, Ky.: University Press of Kentucky, 2006.

Hughes, Thomas Alexander. *Over Lord : General Pete Quesada and the Triumph of Tactical Air Power in World War II*. New York: Free Press, 1995.

Johnson, David E. *Fast Tanks and Heavy Bombers : Innovation in the U.S. Army, 1917-1945*, Cornell Studies in Security Affairs. Ithaca: Cornell University Press, 1998.

Kenney, George C. "The Airplane in Modern Warfare." *U.S. Air Services*, July 1938 1938, 17-22.

Kenney, George C. *General Kenney Reports : A Personal History of the Pacific War*, Usaf Warrior Studies. Washington, D.C.: Office of Air Force History, U.S. Air Force, 1987.

Lambeth, Benjamin S. *The Transformation of American Air Power*, Cornell Studies in Security Affairs. Ithaca, N.Y.: Cornell University Press, 2000.

LeMay, Curtis E., and Dale O. Smith. *America Is in Danger*. New York,: Funk & Wagnalls, 1968.

Meilinger, Phillip S., and Air University (U.S.). Press. *Airmen and Air Theory : A Review of the Sources*. Maxwell Air Force Base, AL: Air University Press, 2001.

Meilinger, Phillip S., and School of Advanced Airpower Studies (U.S.). *The Paths of Heaven : The Evolution of Airpower Theory*. Maxwell AFB, Ala.: Air University Press, 1997.

Middleton, Richard. *The Bells of Victory : The Pitt-Newcastle Ministry and the Conduct of the Seven Years' War, 1757-1762*. Cambridge: Cambridge University Press, 1985.

Mitchell, William. "General William Mitchell Papers, 1907-1946." 21,000.

Mitchell, William. *Our Air Force, the Keystone of National Defense*. New York,: E.P. Dutton & company, 1921.

Mitchell, William. *Skyways: A Book on Modern Aeronautics*. Philadelphia London,: J.B. Lippincott company, 1930.

Mitchell, William. *Winged Defense : The Development and Possibilities of Modern Air Power--Economic and Military*. Tuscaloosa, AL: University of Alabama Press, 2009.

Muller, Richard R. "The Air War in the Pacific, 1941-1945." In *A History of Air Warfare*, edited by John Andreas Olsen, xvii, 488 p., 16 p. of plates. Washington, D.C.: Potomac Books, 2010.

Overy, Richard. "The Air War in Europe, 1939-1945." In *A History of Air Warfare*, edited by John Andreas Olsen, xvii, 488 p., 16 p. of plates. Washington, D.C.: Potomac Books, 2010.

Pirnie, Bruce, United States. Air Force., and Project Air Force (U.S.). *Beyond Close Air Support : Forging a New Air-Ground Partnership*. Santa Monica, CA: Rand, 2005.

Slessor, John Cotesworth. *Air Power and Armies*. Tuscaloosa: University of Alabama Press, 2009.

Slessor, John Cotesworth. *The Central Blue; Autobiography*. New York,: Praeger, 1957.

Smith, Richard K., and Air Force History and Museums Program (U.S.). *Seventy-Five Years of Inflight Refueling : Highlights, 1923-1998*. Washington, D.C.: Air Force History and Museums Program : U.S. Govt. Printing Office distributor, 1998.

Sunzi, and Samuel B. Griffith. *The Illustrated Art of War*. New York: Oxford University Press, 2005.

Thucydides, Robert B. Strassler, and Richard Crawley. *The Landmark Thucydides : A Comprehensive Guide to the Peloponnesian War*. New York: Free Press, 1996.

Trest, Warren A. *Air Force Roles and Missions : A History*. Washington, D. C.: Air Force History and Museums Program, 1998.

Warwick, Graham; Sweetman, Bill. "U.S. Wants Coin Aircraft for Foreign Training." McGraw-Hill,

http://www.aviationweek.com/aw/generic/story_channel.jsp?channel=defense&id=news/dti/2011/04/01/DT_04_01_2011_p38-297236.xml&headline=U.S.%20Wants%20COIN%20Aircraft%20For%20Foreign%20Training&next=0.

Weigley, Russell Frank. *The Age of Battles : The Quest for Decisive Warfare from Breitenfeld to Waterloo*. London: Pimlico, 1993.

Worden, R. Michael. *Rise of the Fighter Generals : The Problem of Air Force Leadership, 1945-1982*. Maxwell AFB, Ala.: Air University Press, 1998.

